URCHASING

March, 1945

CARL WUERPEL:

THE SUPPLY LINE MUST BE MAINTAINED

See page 79

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CONOVER-MAST PUBLICATION . 35

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Shipping lanks by "PACKET"

THE FIRST plane designed solely for transporting military cargo is Fairchild Aircraft's C-82 "Packet". Powered by two 18-cylinder, 2100-hp. engines, the "Packet" has a range of 3500 miles and can fly large weapons, such as small tanks, and other heavy equipment directly to the fighting fronts.

Turning out planes, tanks and countless other weapons of war on a mass production basis requires effective lubrication of plant machinery. To assure this, experienced management in plants large and small—is using Texaco Specialized Engineering Service and Texaco Products.

Texaco performance, preferred in many fields, can definitely increase production in *your* plant.

Texaco Lubrication Engineering Service is available to you through more than 2300 Texaco distributing points in the 48 States.

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

THEY PREFER TEXACO

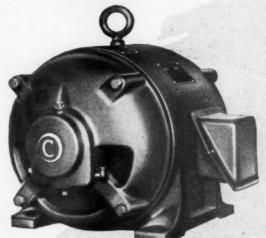
- * More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.
- * More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.
- * More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.
- * More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.
- * More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

PURC

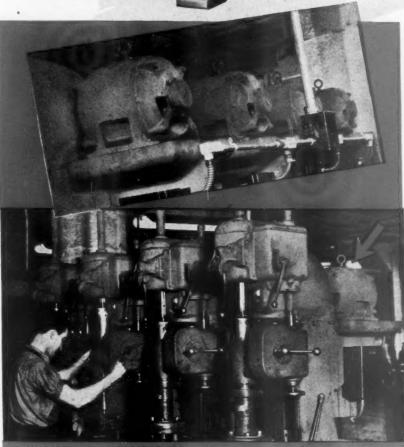


TEXACO Lubricants, Fuels and Engineering Service

MODERN CENTURY PROTECTED INDUSTRIAL MOTORS



Are an important part
of production tooling to
meet industry's peacetime
demands for lower costs



he upper half of the Century Form J general purpose, open, continuous duty motor is closed to minimize the possibility of dripping liquids or falling solids entering the vital parts of the motor.

This added protection feature is made possible because of the scientifically designed Century mechanical ventilation system. All motors generate heat, so if the insulation is to have long life, the heat must be rapidly carried away from the windings. Two fans located behind each bearing bracket draw cooling air "IN" through the openings of both bearing brackets. This cooling air is deflected first around the bearings to keep them cool and then across the windings and to air passages between the outer surfaces of the magnetic core and the frame the heated air being finally discharged "OUT" through the lower sides and bottom of the frame.

These modern, protected, industrial, general purpose motors meet

the requirements of more than 80% of all polyphase motor applications. This Form J construction is at present available in 2 to 25 horse-power four-pole frame sizes.

Your Century Motor Specialist has full information and his wide experience may well prove valuable to you. Call him today.



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CENTURY ELECTRIC COMPANY, 1806 Pine Street, St. Louis 3, Missouri

Offices and Stock Points in Principal Cities



Increases shipping protection . . . reduces packing time

Floated on a soft, downy cushion of KIMPAK*, war materials of every kind are reaching the battle fronts in perfect fighting condition. And after victory, this modernized method of packaging will be a boon to peacetime shippers.

Because KIMPAK is so compact, so flexible, so easy to use, it speeds packaging-saves time and work in the shipping room. Often cuts freight costs by reducing package size and weight. In this particular instance the package size was reduced 80%.

KIMPAK comes in various forms to provide positive protection for anything from refrigerators to jewelry. It will pay you to learn the whole story about this amazingly resilient cushioning material. For a free illustrated book, mail the coupon today . . . and when planning your postwar modernized package include KIMPAK for internal packaging protection.

*KIMPAK (trade-mark) means Kimberly-Clark Wadding



FREE POSTWAR PACKAGING PLAN

In making plans for your postwar product the advice of our packaging representatives is yours for the asking. In most cases they will be able to recommend a war-proven method of float packaging with KIMPAK.

Telephone, write or wire today for the KIMPAK representative.

KIMBERLY-CLARK CORPORATION Creped Wadding Division, Neenah, Wisconsin Send copy of FREE KIMPAK BOOK on postwar packaging methods.



Feel the Grip of the HI-BOND Bar!

Take a firm hold on a piece of Inland HI-BOND Reinforcing Bar and note its grip. This is important to you because when HI-BOND bars are placed in concrete they assure a more effective mechanical grip irrespective of the position in which they are cast or the direction in which they are pulled.

The Inland HI-BOND Bar gives the first real improvement in the bonding value of reinforcing bars in more than 30 years. The scientific design of this new Inland HI-BOND concrete reinforcing bar, with its reversed double helical ribs,

provides vastly greater anchorage and bonding strength. It provides more efficient transfer of stress at splices. The use of HI-BOND Bars will materially reduce the width of cracks thereby reducing the possibility of corrosion and preserving the appearance and safety of reinforced concrete members.

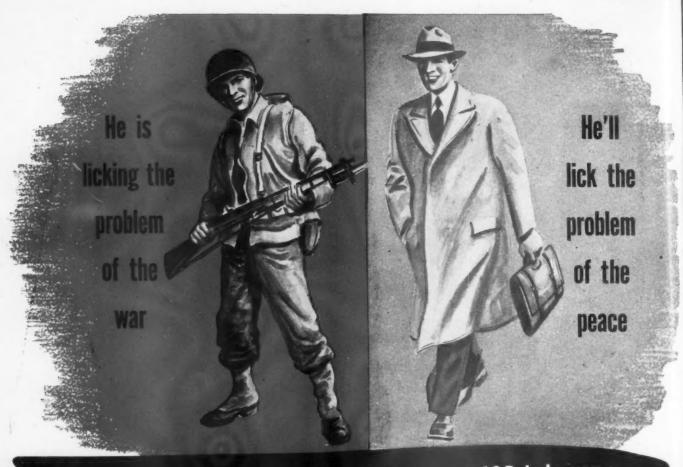
Inland HI-BOND Bars are made in nine standard areas in both new billet and rail steel qualities.

Write for the new bulletin on Inland HI-BOND Reinforcing Bars.

INLAND STEEL COMPANY

38 S. Dearborn St., Chicago 3, Illinois

Sales Offices: Cincinnati • Detroit • Kansas City • Milwaukee • New York • St. Louis • St. Paul



George's own small part will be to help your ISD help you...

George was a salesman for your *Industrial Supply Distributor. Today he's one of the reasons the Allies are on top, thanks to his guts and intelligence and ability. It's a big job that he's helping to wind up.

But the job is no bigger, really, than the job of licking the problems of peacetime that are coming. And that's a job where George is admirably qualified to do his part. As he demonstrated so well in the past, George knows sources of supply-he knows how to get materials to you on schedule-he knows how to anticipate your needs. His specialized knowledge means lower production costs for you.

These will be George's contributions to Industry in the postwar world. In the meantime, please continue to work with your *Industrial Supply Distributor. You'll find it pays to

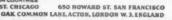
Telephone your sunder SUNDER FIRST!













Obligations of the Leader



THE MASTER WHEEL World's leading power brush made Only by OSBORN

OSBORN, as the leading manufacturer of brushes for industry, has had to supply, in large part, the brushing tools for war-vital industries, strictly under priority.

That's why it sometimes has been difficult to get an Osborn brush, despite the fact that we've increased production till it now looks like a treasury figure.

Very soon we hope to serve you without priority*
... bringing you the world's finest line of industrial brushes plus new techniques, pioneered by Osborn, which have contributed substantially to America's phenomenal war production . . . techniques which can carry over into your business, help you make a better product in less time, at less cost.

Now is the time to consult an Osborn Field Engineer about the improvements Osborn brushes can contribute to your new products. No obligation. Ask us to call.

THE OSBORN MANUFACTURING COMPANY

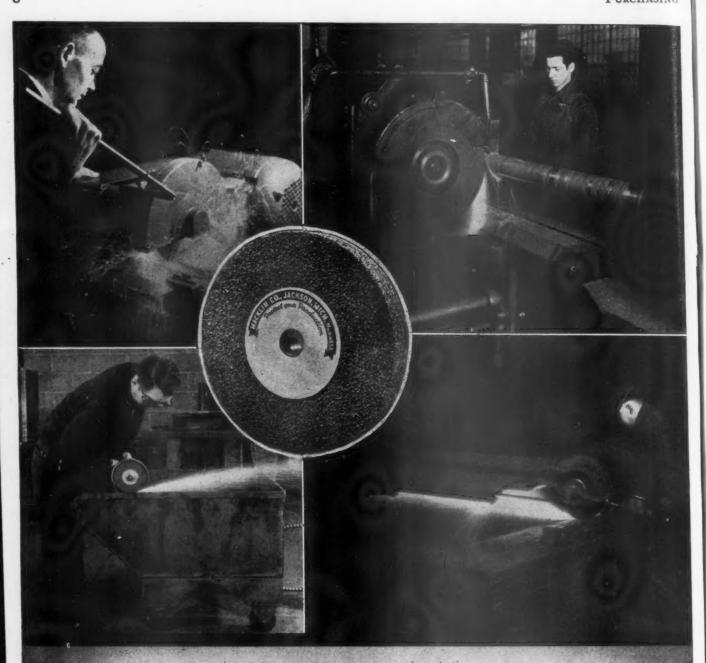
5401 Hamilton Avenue



Cleveland, Obio



*On some items, we can right now.



MACKLIN GRINDING WHEELS are used in all industries. Regardless of whether your grinding operation calls for the tiniest internal wheel or any size up to a 42 inch diameter, MACKLIN can fill your requirements. Get MACKLIN uniformity and "Protect Your Production."

ASK FOR THE SERVICES OF THE MACKLIN FIELD ENGINEER.

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Sales Offices: - Chicago - New York - Detroit - Pittsburgh - Cleveland - Cincinnati - Milwaukee - Philadelphia

4 TOUGH JOBS

... and how to lick 'em with G-E Mazda Lamps

Proper use of better lighting can produce startling results . . . in better efficiency, in reduced spoilage, in more and faster production. Shown here are four typical industrial jobs, each much improved with better lighting from G-E Mazda Lamps. Ask your G-E Lamp Distributor for full details.



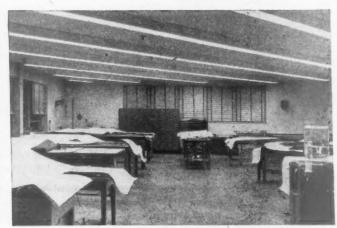
Instant detection of breaks in fine wire helps this plant keep production up, costs down. Correct lighting with G-E Mazda Lamps enables even unskilled workers to reduce errors and do more accurate work.



Polished surfaces often present tough inspection problems. Above, inspection of highly polished machine parts is made easier with low brightness, high footcandle lighting developed with G-E Mazda Lamps.



Safety hazards can be minimized with high level illumination. G-E Mazda Lamps provide uniform, efficient light sources to help operators see better, faster, more accurately.



Fewer mistakes! G-E Fluorescent lighting helps to hold shadows at an absolute minimum. It approaches actual daylight conditions with soft, cool, low-brightness illumination.

"To make G-E Lamps STAY BRIGHTER LONGER"

The constant aim of G-E Lamp Research





CET THIS

"Know-How" Information

USE COUPON BELOW

FOR YOUR PLANT

☐ 1. PLYWOOD — Bulletin shows OPA Maximum Price Regulations. The list is designed not only as a means of figuring carload costs of plywood, but also as a guide to buyers in determining the proper grade for a specific use. Products manufactured in accordance with U. S. Commercial Standard CS-45-42. Contains freight schedule. Pacific Mutual Door Co.

☐ 2. ELECTRONICS — "Can Electronics Improve Your Product?" This is title of 32-page booklet issued by Operadio Manufacturing Co., designed to give executives a condensed, non-technical approach to electronics. General theme is "What Can It do."

☐ 3. ELECTRICAL and LUBRICATING
Devices — Folder contains series of bulletins on Electrical and Lubricating Devices issued by Trico Fuse Míg. Co. Electrical devices include Trico Fuses, fuse pullers, and clamps. Oilers are of the glass and transparent plastic types, thermal, wick-feed, etc.

☐ 4. V-BELT HANDBOOK — Handbook for industrial applications, 72 pages, is available from the B. F. Goodrich Co. Tables indicate sheave combination, driven speeds and horsepower per belt, nominal center distances, and other installation data. Goodrich Multiple V-belts are made in five cross sections and complete variety of lengths, as listed. Handbook contains data on V-flat drives, special drives, sheave specifications, etc.

☐ 5. FLEXIBLE SHAFTING — Stow Book No. 441 gives "The How and Why of Flexible Shafting," in improved machine design for remote control, and for power transmission of fractional or integral horse

power; 32 pages, well illustrated. Stow Manufacturing Co.

☐ 6. CARBIDE TOOLS — Six-page illustrated bulletin describes complete line of Metro standard carbide tipped tools for shop use on the majority of all turning, facing and boring operations on all types of steel, cast iron, bronze, aluminum, nonmetallics, etc. Metro Tool & Gage Co.

7. WEIGHT CALCULATOR — Kropp Forge Weight Calculator operates like a slide rule to give weights of flats, bars, rings and blanks. It is sturdily built of strong cardboard and measures 9" by 33%4" wide. Kropp Forge Co.

□ 8. INDUSTRIAL ELECTRONICS — GEA 4309 is a handy reference on "Industrial Electronics", consisting of a reprint of a series of technical articles by G. M. Chute, Application Engineer, General Electric Co.

☐ 9. AIR-POWER — "A Little Air Power Will Do Many A Big Job", is the title of a pictorial presentation of what is being done with small compressors or with a small amount of air from a shop air line. Nearly 70 photographs show how to put familiar air-operated equipment to work in new ways, or use compressed air to increase production and secure greater economy. They are "easy-to-get ideas." Ingersoil-Rand Co.

□ 10. STEEL PLATE PUNCHES — New standard line of steel plate vertical punches is covered by bulletin No. 303 issued by Thomas Machine Manufacturing Co., which also illustrates line of cast frame punches, floating punches, gagged punching units, shearing attachments and special tool set-ups.

☐ 11. METAL CONVEYOR BELT — Catalog No. 3 describes the Cyclone Metal Conveyor Belt. Belts are fabricated from any ductile metal,—steels, stainless steels, aluminum, brass, bronze, copper, nickel, nickel-chrome, monel metal, etc. Woven belt, flat wire belts, grid belts, etc., are illustrated and described. Varied installations are illustrated. Cyclone Fence Divn., American Steel Wire Co.

☐ 12. WELDED TUBING — "Better Products with Electric Welded Tubing" is the title of 32-page booklet issued by the Formed Steel Tube Institute. Its purpose is to show how to make better products with welded tubing. Many applications are illustrated, ranging from tubular furniture to industrial ladders, shop benches, aircraft parts, automotive parts, pressure applications, etc. Tubing is available in variety of shapes, round, square, fluted, oval, flat, etc. It contains specifications for various tubing applications. Formed Steel Tube Institute.

☐ 13. SIGNAL HORN—Circular describes eight ounce, adjustable horn of rugged construction and high decibel rating which is said to be particularly suited for general use in factories, warehouses and all other interior locations where a loud, low priced signal may be used. Originally designed for aircraft use. It is known as the Edwards 318. Edwards & Co., Inc.

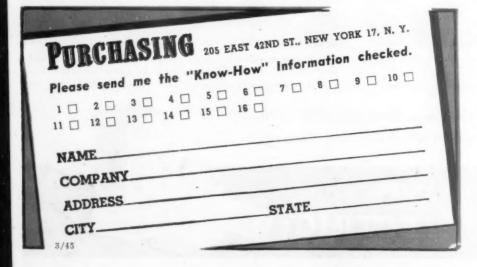
☐ 14. BENTONITE — Bulletin describes the principal industrial uses for Bentonite—in foundry molding sands, as a detergent, purification of water supplies, clarifying medium, etc. It is sometimes referred to as the "Mineral of a Thousand Uses." "Role of Bentonite as a Detergent" is described in special circular. F. E. Schundler & Co., Inc.

□ 15. CELLULUOSIC THERMOPLASTICS

—New technical booklet lists and describes the results of dimensional stability tests on cellulosic plastics at high temperatures and high humidities. Color sketches, photographs, four comprehensive tables, an explanation of test conditions, and discussion of data, makes booklet a comprehensive source of practical data. Before the war, the emphasis in plastics was on beauty and glamour. Since the war, the emphasis has shifted to strength and endurance. Add this book to your library of plastics material. Hercules Powder Co.

☐ 16. BERYLLIUM-COPPER CASTINGS—With only two percent of beryllium added, copper can be hardened to 365 Brinell, and higher. Material can be hardened in the range of 150,000 psi to 170,000 psi, through simple low-temperature hardening

Continued on page 12



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LATHE filing embodies a distinctive filing technique, and is employed to true-up a shaft, spindle, dowel pin, gear, hub or roll-to make it fit or rotate properly-to remove tool marks-in general, to produce a better finish on rounded surfaces. Often a lathe-turned part is purposely left a few thousandths of an inch "oversize" to permit a lathe-filing finish.

Lathe File vs. Mill File. Because of the 45° angle of its teeth, the Nicholson Long Angle Lathe File overcomes filling up and consequently scratching the surface of the work - a tendency common in the shorter-angle Mill Bastard when used as a "lathe" file. The chips slide down the gullets and are forced out at the edge by the motion of the work against the file. This not only makes the file self-clearing, but provides much cleaner shearing, eliminates drag or tear, prevents "chatter," and assures much faster cutting.

Much more can be said about this highly useful Nicholson specialpurpose file - on proper use, and range of surface speeds for various metals and alloys. Full information is available in printed material we have on the subject-and which we will gladly mail, on request, to interested production and purchasing heads.

Consult your mill-supply house as to sizes, prices and deliveries.

NICHOLSON FILE CO. . 28 ACORN STREET, PROVIDENCE 1, RHODE ISLAND (In Canada, Part Hope, Ont.)

Note the long-angle teeth.
Also, one edge of
this file is "safe"
(uncut) to protect
shoulders of work
and the "dog" of and the

NICHOLSON FILES FOR EVERY PURPOSE



"Know-How" Information, Continued USE COUPON ON EACH PAGE

treatment. Material with ultimate tensile srength of 80,000 psi to 90,000 psi, and elongation of 20% to 22% can be supplied. New catalog gives interesting information on the casting characteristics of beryllium-copper, and valuable information on the physical properties of some beryllium copper alloys; recommendations on heat treatment, and other data. This publication should be of especial interest as heretofore very little technical information on the casting properties of beryllium-copper alloys has been published. The Beryllium Corporation of Pennsylvania.

☐ 17. FIRE PROTECTION — "Your Fire Protection Insurance Policy", a 12 page folder describing and illustrating the seven basic types of fire extinguishers in everyday use, iā new piece of literature offered by the General Detroit Corp. A second folder discusses the uses and features of General's vaporizing liquid type extinguisher. Drawings show how to use this type in an emergency.

☐ 18. WASH ROOMS — Folder describes Bradley wash fountains, multi-stall showers, and other fixtures and products, for use in industrial plants, schools, institutions, etc. Bradley Washfountain Co.

☐ 19. GAS and AIR EQUIPMENT — New general bulletin No. G-81-D, describes rotary positive blowers and gas pumps, centrifugal blowers and exhausters, rotary positive vacuum and liquid pumps, rotary displacement gas and liquid meters, and inert gas generators. It is profusely illustrated. Roots-Connersville Blower Corp.

☐ 20. ALUMINUM CASTINGS — New catalog illustrating aluminum die castings, aluminum permanent mold, aluminum sand castings, and zinc die castings, is announced by Monarch Aluminum Mfg. Co. It gives complete tables of aluminum and zinc alloys, their ASTM, Army, Navy, Fed. and SAE numbers.

☐ 21. FLASHLIGHT STORAGE BATTERY
—An information bulletin giving a great
deal of technical and semi-technical information on its rechargeable wet storage
battery for flashlights and the methods of
recharging it, is available from the B. F.
Goodrich Co. It recommends charging
procedures.

☐ 22. ROTARY FILES — Catalog showing both Hand Cut and Ground types of rotary files, each type available in 16 standard styles or shapes; in 3 cuts (coarse, medium, fine); in 64 sizes and in diameters 1/6" to 2", is available from Nicholson File Co.

☐ 23. ROLLER CHAIN — Data Book 1757 describes Silverlink roller chain for economical, efficient, flexible application of power. Recommended especially for tough, outdoor jobs. Link-Belt Co.

☐ 24. GRINDING WHEELS — New marking system adopted by Grinding Wheel Mirs. Assn. is described in folder. Also handy charts for desk or wall provides ready reference to the new markings—how many can you use? Also, Grinding Wheel Data Book, and Supplement which contains wheel selection table. All four pieces are available from Abrasive Co.

☐ 25. SHIPPING BOXES — Purchasing Agents interested in better shipping boxes and crates of lower cost, are invited to send for new 24 page book "How to Ship Safely and at Lower Cost" available from Wirebound Box Manufacturers Assn.

☐ 26. AGITATOR — Bulletin 52-W describes radial propeller agitator which introduces new principle of agitation—by combining the high speed and peripheral velocity of the conventional propeller agitator with the vertical mounting and radial flow of the turbine type. Struthers Wells Corp., Process Eqpt. Div.

☐ 27. VALVES — Catalog 42 shows complete line of Fairbanks bronze and iron valves. Describes Iron-Body O. S. & W. gate valves which give unobstructed full flow. Operating threads on stem are outside the bonnet. The Fairbanks Co.

☐ 28. DIAL TEST INDICATORS — Catalog No. 34 describes complete line of dial test indicators and attachments. Indicators are designed for long life of satisfactory service. Brown & Sharpe Mfg. Co.

29. OXY-ACETYLENE PROCESSES—Flame cutting, flame cleaning, flame-gouging, welding and hard facing and other Linde processes in fabricating steel, in the making of pipe, scrapping steel, etc.,

are described in Combination $\ensuremath{\mathbb{B}}$ series of folders. Linde Air Products Co.

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□ 30. MICROMETERS — Catalog No. 14 describes entire line of individual micrometers and complete sets of Central Certified Accuracy Micrometers: Polished frame micrometers in 1" and 2" sizes; black enamel finish in all sizes 1" to 6"; full range of metric micrometers in addition to complete sets in leather covered cases—0" to 3", 0" to 4" and 0" to 6". The Central Tool Co.

31. CHAIN HOISTS—Bulletin describes "worker's buddy", powerful, dependable Timken equipped Chester super chain hoists and trolleys. Chester Mfg. Co.

☐ 32. PLASTICS DESIGN BULLETIN — New 24-page design bulletin has been prepared by Plastics Divisions of the General Electric Co. and includes a listing of materials, design considerations and molding processes. Get copy for your plastics file.

☐ 33. GRINDING WHEELS, Abrasives,— Catalog describes wheels, sandpapers, honing stones, rubbing bricks, sharpening stones, compounds or wheel dressers your company may need for some grinding problem. Mid-West Abrasive Co.

☐ 34. BEARINGS—New 72-page catalog lists and describes Johnson General Purpose Bearings. Over 850 sizes. Johnson Bronze.

☐ 35. PACKAGING — (Sample) Fibreen is packaging material developed by Sisal-Kraft Co. It is used for lining cases, wrapping bales, wrapping parts, etc. It is moisture and dirt proof, pliable and tough. Sample on request—test it by tearing. SisalKraft Co.

☐ **36. SHOVELS** — Catalog describes Razor-Back shovel, in which steel is "Surface Peened" making for unusual toughness. Union Fork & Hoe Co.

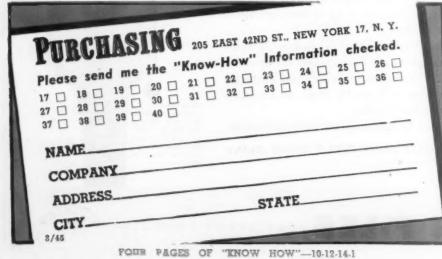
☐ 37. SEALING MATERIALS — Twelvepage booklet "Gaskets, Packings, and Seals" contains helpful information on sealing materials. Seals available molded from Neoprene, Buna N, Buna S, Thiokol, butyl or other synthetic materials as well as from natural rubber. Armstrong Cork Co. Gaskets and Packings Dept.

38. STAINLESS WELDING FITTINGS—Bulletin S-306 describes Pittsburgh Piping stainless welding elbows; made in 90 deg. and 45 deg. styles in stainless Type Nos. 308, 316, 317, and 347; sizes 34" to 8". Pittsburgh Piping & Equipment Co.

☐ 39. TECHNICAL PLASTICS — Catalog describes Synthane technical plastics, their electrical, physical and chemical qualities. Get copy for your plastics library. Get acquainted with plastics. Synthane Corp.

☐ 40. NATURAL—SYNTHETIC Rubbers— Two-page leaflet on the "Property Relation of Natural and Synthetic Rubber" comparing their respective physical and chemical qualities, has been issued by the B. F. Goodrich Co. Akron, Ohio.

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Walker-Turner Machine Tools have effected remarkable savings in war plants. Their wide range of operating speeds permits selection of optimum (most economical) cutting speed for every material. Simple, easy operation makes every manhour more productive. Streamlined flexibility permits economical tooling set-ups. Low price and low power consumption keep capital investment and operating costs at a minimum.

Use Walker-Turner Machine Tools for the many jobs within their range and reserve heavy equipment for heavier work.

Walker-Turner Co., Inc., Plainfield, N. J.

Fast positioning and wide range of speeds make W-T Radial Drills ideal for this job at the plant of a large aircraft builder.



W-T Radial Saw cross-cuts, rips, dadoes, miters, routs, tenons, Also available in metal-cutting model.



Speed range from 61 to 5300 s.f.m. in this W-T Band Saw cutting Plexiglas bomber nose at Rohm & Haas



W-T 15" Drill Press has high speeds and spindle sta-bility for fine drill-ing at General Ceramics plant.

DRILL PRESSES — HAND AND POWER FEED . RADIAL DRILLS
METAL-CUTTING BAND SAWS . POLISHING LATHES . FLEXIBLE SHAFT MACHINE
RADIAL CUT-OFF MACHINES FOR METAL . MOTORS . BELT & DISC SURFACER

"Know-How" Information, Continued

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□ 41. BRAZING CARBIDE Tool Tips — Bulletin 11-A released by Handy & Harman is on the subject of brazing carbide tool tips, the process making joints that hold for the life of the tool. At the same time it permits ready removal of used tips for salvage and re-use of shanks. Bulletin also tells about brazing high speed tool tips. 62 Fulton St., New York, N. Y.

☐ 42. FACE SHIELDS — Four-page catalog describes the new "Hundred Series" of face shields available from Safety Division of The Boyer Campbell Co. Models are identified by a variance of headgear, all being designed upon the primary premise of comfort. For each model of face shield there is a choice of 3 different thicknesses and 3 different sizes of cellulose acetate windows; 3 sizes of 24-mesh screen windows for heat protection and a fiber front for scarfing and welding.

☐ 43. ELECTRICALLY OPERATED SWITCHES — Bulletin No. 600 covers major items in the Asco line of Electrically Operated Switches. These include automatic transfer switches (mechanically & magnetically held); remote control switches, contactors, relays (magnetically and mechanically held) and solenoids. Automatic Switch Co.

□ 44. DIE CASTING MACHINE — Folder describes new high pressure die casting machines — zinc, tin and lead, and aluminum, brass and magnesium. Frames are built of a one-piece steel casting for great shock resistance and die locking power. Machines are said to be built to render trouble-free service and to produce top-quality castings of great strength and density at the highest practical speeds. Lester-Phoenix Inc.

☐ 45. MACHINE SCREW Thread Dimensions — Handy table of machine screw thread dimensions, printed in pocket-size card form, is available from Manufacturers Screw Products. It shows the nominal diameter and threads per inch (National Coarse and National Fine) for all standard machine screws and the maximum and minimum major, minor and pitch diameters for each size. Tap drill sizes and diameters for each screw are shown.

☐ 46. GRATE COOLER — Bulletin CO-3 describes Fuller Air-quenching inclined grate cooler. Designed primarily for the production of cement clinker of high glass content, it has been applied successfully to the cooling of ores, lime, dolomite and similar materials. Fuller Co.

☐ 47. RHEOTROL — This is a device to maintain a desired electric power or heat input, or flow of liquids or gases to any process or equipment, product of Wheelco Instruments Co. Bulletin J303-2 describes the instrument and its operations.

☐ 48. PLASTICS MOLDING — Bulletin describes design, mold making and molding services and facilities of Kurz-Kasch, Inc. Catalog 103 and 104 describe stock parts—knobs, push-buttons, dials, control balls, and cosmetic containers, in detail.

☐ 49. STRAIGHTENING PRESSES — Line of hydraulic straightening presses, Model VL-1, designed for handling both finished and rough work, is described in Bulletin VLI-44. These open side presses are of rugged reinforced welded steel construction with built-in motors. Bulletin gives specifications on models ranging in capacity from 10 to 50 tons. Colonial Broach Co.

□ 50. GEAR FINISHING MACHINES — Improved Model 860-B gear finishing machines designed for maximum production of both spur and helical gears are described in Bulletin 680-B-44. Machine is built in three sizes for the finishing of gears up to maximum diameters of 8", 12" and 18 inches respectively. Gears up to 5" in width can be finished on all three types, and gears or splines as small as 1 inch O.D. may be shaved on any of the three sizes. Michigan Tool Co.

□ 51. FLEXIBLE METAL HOSE — Pamphlet of 12 pages entitled "Flexible Metal Hose for Every Industrial Use" shows basic types of flexible metal hose available and some of their specifications. Chicago Metal Hose Corp.

☐ 52. CONDENSATE RETURN — Publication 3250 describes Cochrane C-B System for return of condensate from process equipment operating at pressures up to

200 pounds directly back to the boiler without flash loss and with all of the sensible heat contained in the original steam. Fuel savings of from 10 to 15% are said to be obtained—boiler pressure more easily maintained—and boiler capacity increased. Cochrane Corp.

□ 53. RESISTANCE WELDING — Written for the non-technician, booklet "Tomorrow's Production Today by Resistance Welding" is a brief review of what resistance welding has accomplished, what it is now doing to speed the war effort, and what its future possibilities for postwar metal fabricators will be. Basic types of resistance welding and their application are explained. Resistance Welder Manufacturers' Association.

Bulletin describes Houghton's fingerprint neutralizer designed to prevent corrosion raising from handling steel parts. It may be used as a general rust preventive. It leaves a thin oily film of about .003" which is removable by cloth saturated with kerosene or equivalent solvent prior to final application of an approved corrosion preventive for permanent protection. E. F. Houghton & Co.

□ 55. STEEL STAMPS — Three-color folder gives complete data on steel stamps. These are steel letter and figure stamps developed for use of industrial plants producing heavy and light precision machine products. Acromark Co.

Technical Service Data Sheet No. 3-2-210-2 describes Deoxidine No. 210 for spray application. It is a crystalline phosphatic chemical used to simultaneously clean and condition steel products to properly prepare them for durable paint finishes. American Chemical Paint Co.

☐ 57. CARBON PAPER — RIBBONS — Catalog of 16 pages describes typewriter carbon papers, pen and pencil carbon papers, carbonized rolls, inked ribbons for office machines, and typewriter ribbons. Coupon book service available. Ault & Wiborg Carbon & Ribbon Co., Inc.

□ 58. UNIVERSAL FITTINGS — Bulletin No. 4 describes line of patented fittings which incorporate double safety factors and require less than half of the usual number of tightening bolts, according to the manufacturer. They are designed to meet the problem which arise in connection with the supporting of high or low tension wires and cables, industrial scaffolding, towers, work platforms, or general manufacturing purposes. Each fitting is made up of two or more castings, male and female, all interchangeable. Each can be used in combination with any other, making possible 10,000 combinations. Universal Fittings & Scaffolding Co.

☐ 59. HYDRAULIC DEVICES — Bulletin describes hydraulic devices engineered and developed for specific applications. Illustrations show special presses, pallet loading, coil stacking high elevating turntable, etc. Lyon-Raymond Corp.

Continued on page 16

PURCHASING 205 EAST 42ND ST., NEW YORK 17, N. Y.

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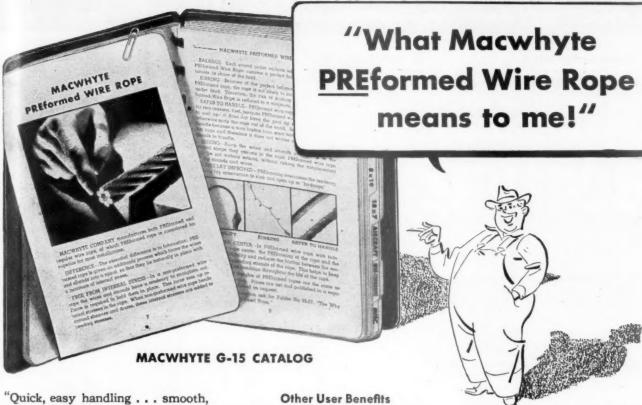
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"Quick, easy handling . . . smooth, uniform spooling . . . long, economical service — those are some of the *plus* benefits I get from Macwhyte <u>PRE</u>formed," says the typical wire rope user.

Why Macwhyte PREformed is preferred

All wires and strands in a Macwhyte PREformed rope are formed into a spiral, so that they lie naturally in place. Because it is free from internal stress, a Macwhyte PREformed rope has great fatigue resistance. Internal friction caused by wires and strands moving against each other is sharply reduced, resulting in a minimum of internal wear.

In Macwhyte <u>PRE</u>formed, every strand in the rope is under uniform tension. There is no "early" wearing out of some strands while others "loaf." The perfect balance of strands makes Macwhyte <u>PRE</u>formed exceptionally kink resistant.

Macwhyte <u>PRE</u> formed on your equipment means fewer shut-downs, less trouble. It is safer to use because it can be cut without seizing—broken strands won't wicker. The extreme flexibility of Macwhyte <u>PRE</u> formed makes it hug the drum, reduces wear both on the wires and in the groove of the sheave. Because of its long life, Macwhyte <u>PRE</u> formed gives lowest possible cost per load carried.



All this, and Macwhyte Internal Lubrication, too!

Every wire in every strand of Macwhyte PREformed rope is coated with Macwhyte internal lubricant to protect against moisture, rust and ordinary acids. Heavy and tenacious, it clings to the wires unaffected by temperature changes.

The demands of our armed services are so great now, there may be times when we cannot give you our usual prompt service and delivery. The situation changes from day to day, so please keep trying. We'll serve you if we possibly can.



The correct rope for your equipment

MACWHYTE COMPANY Wire Rope Manufacturers

2918 FOURTEENTH AVENUE

KENOSHA, WISCONSIN

 Mill Depots: New York • Pittsburgh • Chicago • Fort Worth • Portland • Seattle • San Francisco. Distributors throughout the U.S.A;

 MACWHYTE PREformed and Internally Lubricated Wire Rope
 MONARCH WHYTE STRAND Wire Rope
 MACWHYTE Braided Wire Rope MACWHYTE Aircraft Cables and Tie-Rods

MACWHYTE Stainless Steel Wire Rope MACWHYTE Monel Metal Wire Rope

"Know-How" Information, Continued USE COUPON

describes Limitrol, new comparator gage which incorporates six inspections in one. Eliminates "feel" from inspection. Indicator enables operator to see if part is within tolerance or outside limits specified. Hand model and bench model available. N. A. Woodworth Co.

☐ 61. CUTTING OIL—Small bulletin describes DoAll 470 Soluble Oil, a highly developed lubricant and coolant produced as a better all around soluble cutting oil. Cooling and lubricating qualities are "stepped up" by dispersal of effective quantities of colloidal graphite throughout the oil. Bulletin contains mixing chart. The DoAll Co.

☐ 62. RADIUS DRESSERS — Catalog insert describes two new models of radius dressers; Model 45, adaptable to all radii up to and including $4\frac{1}{2}$ " and can be used for concave or convex dressing; Model 124 is an angle correcting radius dresser (maximum radius $1\frac{1}{2}$ ") and is designed for correcting radius on a wheel for grinding compound and compound complex forms on flat form tools. Complete catalog available. U. S. Tool & Míg. Co.

☐ 63. SQUARE D DIGEST — This is an abridged catalog containing numerous photographs and listings of products not included in previous issues 'showing Square D line which includes safety switches, service equipment, multi-breakers and other circuit breakers, panelboards, bus and feeder duct, motor control and pressue switches. Square D Co.

☐ 64. LIFT TRUCKS and Skids — Barrett Junior catalog describes lift-trucks and skids for moving materials as a unit and saving manpower. Barrett-Cravens Co.

☐ 65. FIRE BRICK — Five types of fire brick for temperatures to 2600 deg. F. are described in nev: edition of booklet just issued by the Armstrong Cork Co. Booklet features new data on suspended arches and walls and tailor-made arches and domes. Diatomaceous Earth and Insulating Concrete and Ingot Mold Insulating Concrete and Ingot Mold Insulation also are described.

☐ 66. VIBRATION — Three G-E vibration measuring instruments are described in publication GEA 4140, namely, the dial-type indicator and light-beam type for measuring displacement, and the velocity meter for measuring displacement or velocity of vibration. Instruments are useful for (1) improvement of the quality of products, (2) reduction of damage to machinery and buildings, and (3) reduction of noise. General Electric Co.

☐ 67. CARBON and GRAPHITE PROD-UCTS — Catalog Section M-8000-A describes a wide variety of carbon, graphite and "Karbate" products manufactured by National Carbon Co., Inc., for use in the chemical, metallurgical, mechanical, electrical and other industries. Products are presented in sequence as applying to each of these industries. There are many charts and tables covering the physical and chemical properties, together with application and operational data.

☐ 68. SIGN HANGERS AND DISPLAYS— Two-color book shows sign brackets and display units used by leading advertisers, and suggested modern designs "likely to be seen in coming years." Schneider Metal Manufacturing Co.

☐ 69. DRILL PRESSES—Catalog D.43 illustrates and tells about Atlas drill presses, bench and floor type heavy duty drill presses, multiple spindle drill presses, coolant systems, accessories and attachment. Atlas Press Co.

☐ 70. RUBBER DEVELOPMENTS — Reproduction of 26 advertisements of its industrial rubber products are contained in new booklet titled "Typical Examples of B. F. Goodrich Development in Rubber." Wide variety of product applications is illustrated.

☐ 71. SILVER SOLDERING FLUX—Silver Solder Flux, Superior No. 6, is described in bulletin released by Superior Flux Co. It is an alkaline, non-corrosive, non-fuming flux, containing no free fluorides with an effective temperature range of 800 deg. F.

☐ 72. PULP WASHERS — Outstanding features of Swenson-Nyman line of pulp washers are fully covered in new catalog

bulletin of eight pages in two colors. Swenson Evaporator Co., Divn. of Whiting Corp.

☐ 73. OPEN FLOORING — Bulletin of 8 pages describes and illustrates the various types of Prestoweld grating, including flooring and stair treads, together with diagrams and data on the various types and sizes. Features according to manufacturer are maximum strength at minimum weight, maximum open area, complete safety, adaptability and maintenance economy. Grating is available in standard panel widths of 24", 36" and 48", and also in odd widths. National Machine & Foundry Co.

☐ 74. ROTARY PUMPS — New Bulletin 306 gives Facts About Rotary Pumps, describes the Blackmer bucket design (swinging vane principle,) and tells how a Blackmer pump works, — shows what happens inside of these pumps. Blackmer relief valve is also described. Blackmer Pump Co.

Believed to contain the most complete data on coumarone indene resins ever published. 82-page book released by The Neville Co. bearing title "Industrial Uses of Neville Resins & Plasticizers" gives new information on applications of a number of these products. Uses in flooring, food, paper, adhesives, plastics, dental compounds, electric insulation, chewing gum, textiles, waxes, leather, natural and synthetic rubber, and protective coatings are fully discussed.

☐ 76. V-BELT DRIVES — Unusually complete V-belt drive catalog, with all of the required information to make correct drive selections reduced to handy charts, tables, and drawings, is available from Allis-Chamlers Mfg. Co. The company's new "Magic-Grip" sheave, designed for fast, easy mounting and dismounting, is described. Vari-pitch sheaves and drives and speed changer are also described.

☐ 77. PHIL-DUMP — Hand push models (1-2 cu. yd. cap.), new Phil-Dump car is described in 4-page bulletin which also described in 4-page bulletin which also illustrates tractor models. It is available with solid rubber tires only. Overall dimensions of the car are 66" long, 38¼" high and 24¼" wide. Tractor models are made in one and two yard capacities. Super-tractor model is of 3 cu. yds. capacity. Phillips Mine & Mill Supply Co.

☐ 78. SPRING HANGERS — New functional spring hangers with multiple rolling action are described in Bulletin No. 2027 issued by Blaw-Knox Co., Power Piping Division. They permit swivel action in all directions, provide the means for obtaining and holding the desired degree of force in opposition to the vibration, and vibration eliminator maintains alignment. Springs are totally enclosed and guided. Actual load and vertical movements indicated at all times.

☐ 79. FASTENERS — Sems Fastener Unit, pre-assembled Shakeproof lock washer and screw are illustrated in Fastening Application Bulletin which shows a few of the many uses. Shakeproof Inc-

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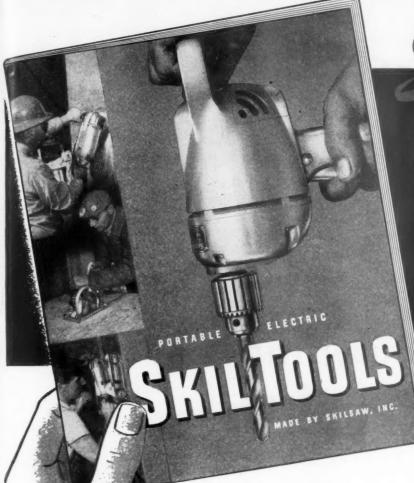
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FOR THIS NEW SKILTOOL CATALOG just off the press!



SPECIAL SECTION

on Care and Operation
of Electric Tools

Every owner, every operator of portable electric tools needs this manual to help make tools do their job better and last longer. The SKILTOOL Maintenance Manual in the SKILTOOL CATALOG is packed full of useful information on the care and economical use of all portable electric tools. Whether you use SKILTOOLS exclusively... or whether you also use other makes... you'll save money and delay the need for tool repair by reading and heeding the advice in the new SKILTOOL Maintenance Manual and Catalog. It's yours for the asking. Mail the coupon today!

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MARC



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NATURAL GREENLAND CRYOLITE

ARE AVAILABLE AGAIN!



Plenty of Kryolith is on the market again for the glass, ceramics and enamel industries. Enough is available for both domestic and expert consumption. And Kryolith is the *only* NATURAL GREENLAND CRYOLITE sold in America.

GLASS MANUFACTURE is aided through Kryolith's capacity to dissolve coloring oxides, thereby improving the lustre and clarity.

CERAMICS MANUFACTURE benefits through Kryolith's long fluxing action, high degree of opacity and quicker reduction of batch due to its low melting point.

ENAMEL MANUFACTURE gains greater freedom from chipping and crazing, and purer whiteness through Kryolith's low melting point and lasting fluxing action.

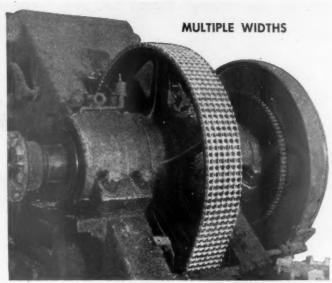
Kryolith comes packed in 500 lb. barrels and 100 lb. bags. For complete information, write today.

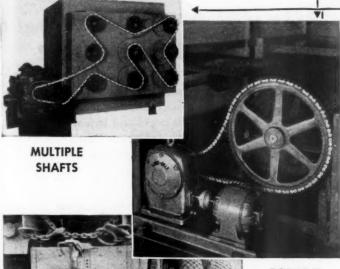
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1000 WIDENER BUILDING, PHILADELPHIA 7, PA.

NEW YORK • CHICAGO • ST. LOUIS • PITTSBURGH • CINCINNATI • MINNEAPOLIS WYANDOTTE • TACOMA

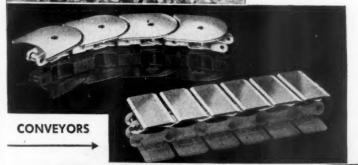
WHAT <u>Can't</u> YOU DO with LINK-BELT Silverlink ROLLER CHAIN?





POSITIVE RATIO

TWIST TYPE FOR MOBILE EQUIPMENT



MODERN DESIGN Continually Utilizes its Basic Advantages

• Designers and manufacturers seeking new versatility and new efficiency in their products rely more and more on the numerous advantages of Silverlink Roller Chain.

Positive transmission of power means perfect timing and coordination of machine operations. Shafts in any number, in any arrangement, can be given either direction of rotation, on long or short centers. While slip or creep is impossible, resilience of chain absorbs heavy shock loads, thereby protecting motor and driven machine.

Depend on Link-Belt Silverlink Roller Chain for efficiency and long service in power transmission and conveying. Write for Engineering Data Book 1957.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices, Factory Branch Stores and Distributors in principal cities.



MARCH

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The same efficient portable tool makes a powerful drill press, too!

That's right! The same Black & Decker Electric Drill that's so handy to carry from job to job also clamps quickly into a Black & Decker Drill Stand to make a powerful drill press and is just' as quickly removed for portable use. And Black & Decker Drills of all sizes-from 1/4" to 11/4"-are designed and powered for this double-duty service.

Black & Decker Drill Stands provide the leverage for a steady, smooth feed on precision work . . . as well as for tremendous pressure when needed. And Black & Decker Drills have what it takes to keep every product of Black & Decker-world's going under that pressure, on any job up to their rated capacity.

& Decker Tool is specifically designed and made for the job it has to do. For example, Black & Decker uses no stock motors. The

& Decker-to deliver maximum efficiency and performance in that particular tool.

Whether you buy one tool or thousands, get the extra satisfaction that's built into largest manufacturer of portable electric tools. And for the answer to most any That's because each part in every Black tooling problem, call your nearby Black & Decker Distributor. You'll find him anxious to be of service and a ready source of information and supply on the complete motor in any Black & Decker Tool is Black & Decker line. The Black & Decker engineered and built completely by Black Mfg. Co., 664 Penna. Ave., Towson 4, Md.



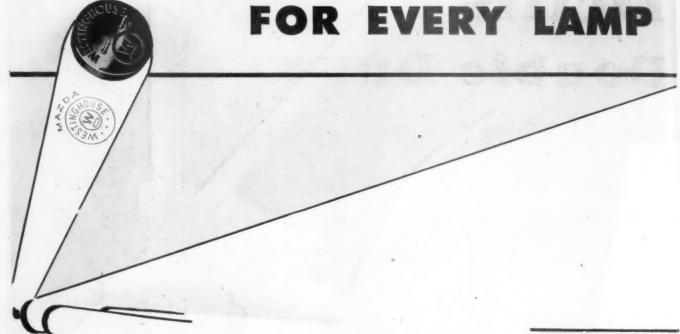
Drills .

Double Dut

Black & Decker

1/2" STÄNDARD DRILL in No. 40 DRILL STAND

MARC



Every Westinghouse Fluorescent Lamp is a triumph of tireless research, skilled engineering and manufacturing know-how. Long life, unvarying efficiency and end-to-end brightness are literally built into every lamp carrying the famous Westinghouse trade mark.

Rigid control of raw products guarantees the utmost in quality material used. An example of this meticulous care can be demonstrated by the system of acid-washing, mixing and blending by which the phosphor powder is purified. Foreign matter is removed to a degree that not one part in a million remains to affect the light output.

This is matched by a precision of assembly technique which assures the uniformity of every Fluorescent Lamp Westinghouse makes. For instance, standards are so exact that no lamp varies more than $47/1000 \, \mathrm{ths}$ of an inch in length.

"Quality Control" means a long and useful life for every Westinghouse Fluorescent Lamp. And naturally means that you can buy with complete confidence every lamp marked "Westinghouse." Westinghouse Electric & Manufacturing Co., Bloomfield, N. J.



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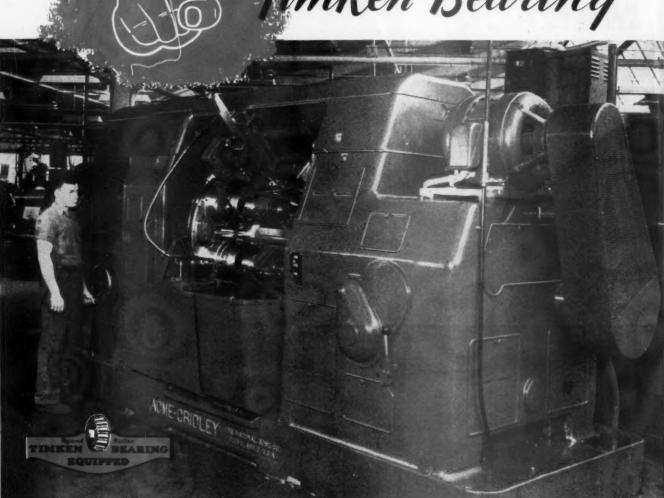
Westinghouse
PLANTS IN 25 CITIES OFFICES EVERYWHERE

MAZDA LAMPS FOR SEE-ABILITY



MARCH

What YOU should know about the Timken Bearing



MANUFACTURE- Parent of Precision

Just as the design of the Timken Tapered Roller Bearing has been developed and improved steadily over a long period of years, so also has the manufacture of the Timken Bearing been brought to its supremely high standard.

The factory of The Timken Roller Bearing Company is not only the largest in the world devoted exclusively to the manufacture of tapered roller bearings; it also is one of the world's finest examples of precision production on an extensive scale.

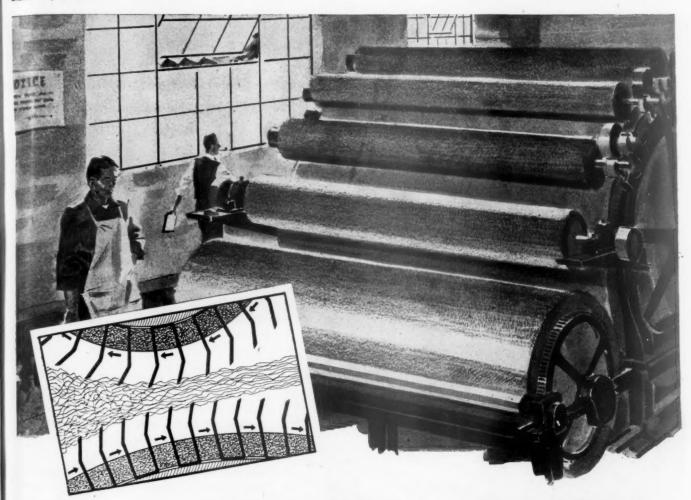
To give the Timken Roller Bearing its watchlike accuracy, many millions of dollars are invested in tools, gauges and automatic machines of all kinds. Tolerances of less than one tenthousandth of an inch are regularly adhered to in many phases of manufacture.

Thus, although millions of Timken Bearings are produced every month, so accurate are our

manufacturing methods and so careful our inspection and testing, that uniformity of quality — and consequently of performance — are consistently maintained.

To be sure of getting these and other advantages, look for, and insist on seeing, the trademark "TIMKEN" stamped on the cup and cone of every tapered roller bearing you buy for original equipment or replacement in automobiles and all kinds of industrial machinery. The Timken Roller Bearing Company, Canton 6, Ohio.





Carding Wool is a Tug O'Wire!

IN a wool carding machine, thousands of tiny wire teeth tug at each strand of wool until the matted fibers are separated and paralleled sufficiently for spinning. Without this important operation, wool would remain in tangled lumps—totally unfit for manufacturing into cloth.

One of the vital parts of this carding machine is the wire teeth. Fastened to a backing of fabric or leather—as many as 780 to the square inch, these tiny wire teeth catch the wool fibers, pull them to straight lengths and carry them on to the next roller.

Hard tugging demands high tensile strength and resiliency in the card wire to prevent breakage or permanent bending. To hold its sharp point and resist the harsh abrasion of tough wool fibers, it must be hard—high in carbon. Finish must be smooth so the wool will not be torn. Add to these rigid specifications a tolerance of only .0002 in diameter, and you see why it takes a top notch job of wire drawing to deliver the kind

of wire needed for this critical carding operation.

For the past 30 years, Worcester Wire Works has been doing that kind of wire drawing—not only for textile applications but for scores of other industries who demand the very finest wire available for their particular requirements.

Our engineering and research staff is ready to help you with your wire problems, to aid in developing special types of wire for your individual purposes, to improve the manufacture of your product or increase its serviceability.



Buy and Keep War Bonds

Divisions of National-Standard Company

WORCESTER WIRE WORKS

Worcester, Mass.

ROUND STEEL WIRE, SMALL SIZES

OR

NATIONAL-STANDARD CO.

Niles, Mich.
TIRE WIRE, FABRICATED
BRAIDS AND TAPE

THE ATHENIA STEEL CO.

Clifton, N. J.

COLD ROLLED, HIGH CARBON

SPRING STEEL

WAGNER LITHO MACHINERY CO.

Hoboken, N. J.
LITHOGRAPHING AND SPECIAL



"T-i-m-e-d for Better Taping"

1 BETTER TAPING, more efficient operation... that's what accurate timing means to this taping machine. And it gets that split-second timing because its design incorporates the slip-free power transmission and accurate coordination of operations offered by Baldwin-Rex Roller chain belts.



2 TIMING is a vitally important function here. As boxes are formed from corrugated board, the machine tapes the corners. Conveying the boxes, transmitting power and timing of various operations must be perfectly co-ordinated. Power must be even—to avoid breaking tape. That's why Baldwin-Rex Roller chain belts are used. They don't slip...they're compact...quiet...easy to install...clean...low in maintenance and cost.

3 NOTICE HOW MANY OPERATIONS are performed in this machine by Baldwin-Rex Roller chain belts, as shown by this drive diagram. Their positive action . . . efficient operation . . . and the fact that they are not affected by heat or moisture, make them preferred by many designers for all driving, conveying, and timing functions.



For catalogs on Baldwin-Rex Roller chain belts or competent information on your specific drive problems, write BALDWIN-DUCKWORTH Division of CHAIN BELT COMPANY, 366 Plainfield Street, Springfield 2, Mass.

BALDWIN-REX ROLLER CHAIN BELTS

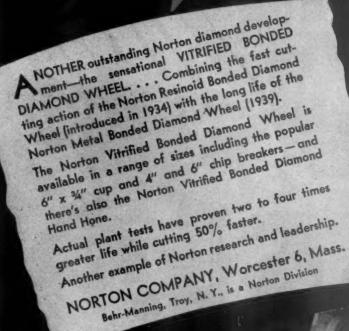
Baldwin-Duckworth Division, Springfield 2, Massachusetts

Rex Chain Belt and Transmission Division, Rex Conveyor and Process Equipment Division, Milwaukee 4, Wisconsin

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NURTON DIA MOND WHEEL WHEEL

NORTON ABRASIVES





TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON SUNDAY NIGH ME





A "must" in processing Governmentowned production equipment for storage. Texaco rustproofing products meet Government specifications for this purpose.

HIGH on the list of reconversion "musts" is protection against ruinous RUST for machines, precision tools and other production equipment made idle by termination of war contracts. If the equipment is Government-owned, contract specifications require that it be cleaned and processed with minimum delay after production ceases. If it is your own equipment, full protection of your investment naturally calls for equally prompt rustproofing precautions.

Ordnance Specification P.S. 300-4 for processing, packaging, packing and marking of production equipment gives exact specifications for rustproofing materials that must be used on Government-owned equipment. Texaco rustproofing products meet Government specifications. They are easily applied through the medium of brush, dip or spray, and provide a protective coating that will assure preservation for years.

Whatever your rustproofing requirements, a Texaco representative can render helpful service. Get in touch with the nearest of the more than 2300 Texaco distributing points in the 48 States, or write to The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Rustproofing Products

MARCH

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NEED HELP? Call Groo-

A few basic types of synthetic rubbers are being surrounded by an ever-thickening fog of trade names and other designations. It is the result of the rapid development of the synthetic rubber industry and not a "deep-dyed plot" to confuse the unwary.

But the fact that confusion does exist is a challenge to everyone vitally concerned with the new world of product development opportunities opened by synthetic rubber technology.

Here at "Ohio Rubber," ORCO techni-

cians are keeping abreast of the complicated and ever-changing map of synthetic rubber. Without favor or prejudice (Ohio Rubber is a user, not a producer of synthetic rubber) ORCO technicians seek only to apply the advantages of ALL varieties of synthetic rubber to the particular requirements of each specific application.

If YOU seek help on rubber or synthetic rubber for molded parts, extruded parts, or rubber-to-metal adhesion parts, CALL "ORCO."

"ORCO-OPERATION"

THE OHIO RUBBER COMPANY · WILLOUGHBY, OHIO

BRANCHES: DETROIT . NEW YORK . CHICAGO . INDIANAPOLIS . WASHINGTON . CLEVELAND



THE art of manufacturing uniform cemented carbides requires the same "exceeding care" exercised by the talented research men who established the fundamental principles and practices of this highly specialized branch of metallurgical science. That is why Kennametal is subjected to precise control throughout every stage of its manufacture, by means of scientific instruments in the hands of skilled technicians. The objective of the chemical and metallurgical checks of processing is three-fold:

First, to produce cemented carbides that will exactly suit predetermined requirements of differing character.

Second, to assure that the desired characteristics of finished products are uniformly maintained.

Third, to form the basis for continued research looking to still further improvement in the properties and applicability of Kennametal.

● The invention and development of Kennametal—a scientific achievement—has led to corresponding useful arts. Kennametal's ability to cut hard metals with sustained accuracy, at greatly increased speed, has made major contribution to the technique of high production machining and milling. Its unique wear-resistant properties have created opportunity which many manufacturers have seized upon to give their products greater serviceability.

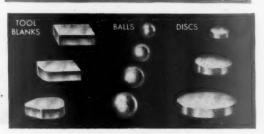
The technological advancements that accompany the use of Kennametal serve to suggest the tremendous potential benefits to society that are always inherent in a system under which inventive genius is granted the rights, and given the means, to encourage full utilization of its talent.



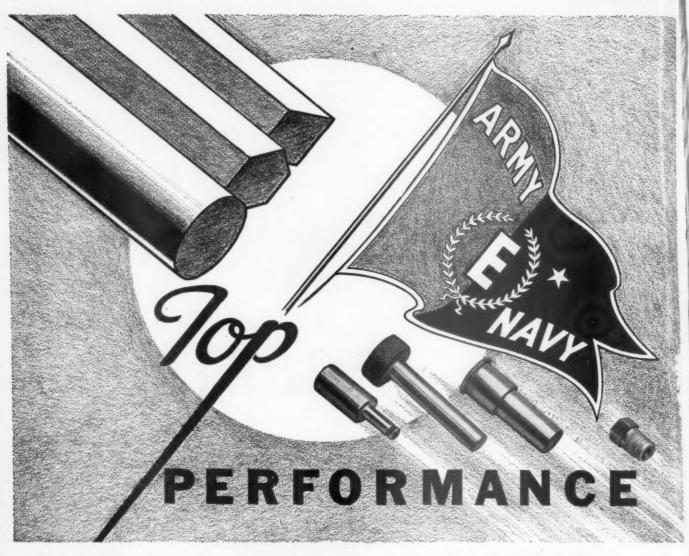
KENNAMETAL GRE., LATROBE; PA.

Typical KENNAMETAL Products

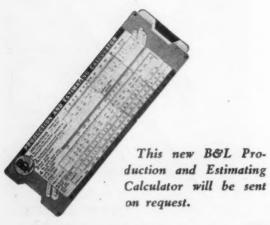




MARCH,



with B & L ULTRA-CUT STEEL . . .



This fast-machining Screw Stock has won recognition with other B&L Cold Finished Bar Steels for "merit in service". Its high production record in the fabrication of vital machine parts in war equipment has helped sustain output in many essential industries making steel products.

Now is the time to get acquainted with the top performance that Ultra-Cut Steel will give on your automatic screw machines. Its economy will prove an important advantage in your post-war operations. Specify it whereever you need maximum machining rates on intricate parts requiring close tolerance and bright finish.

BLISS & LAUGHLIN, INC.

HARVEY III

BUFFALO, N. Y.

MANSFIELD, MASS.

Sales Offices in all Principal Cilies

COLD FINISHED STEEL AND SHAFTING

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QUADRUPLED. ... AND THE LAST WORD IN EQUIPMENT ... War expansion quadrupled Formica's capacity both for production quadruplea rormica's capacity bom

the house the inetallation of laminated plastics.

The production and machining of laminated plastics. It brought about the installation of the latest modern equipment, and the installation of the latest modern of procedure throughout the plant. Now this giant capacity by far the largest in the industry—this up-to-date equipment, and the trained man power to operate it, is ready for the service of industry in general. It will make possible prompt delivery in quantity flexible service, a high level of uniformity and accuracy in the material produced. Among the new features of equipment: vertical Among the treating the new teatures or equipment: vertical hy infra-red lights; even cure of thick material by application of thick may supplication of thick may supplication of the transfer of the high frequency electronic heat; new types of tube rolling machines and many others. THE FORMICA INSULATION COMPANY FORMICA



THIS "one-piece-at-a-time" system works fine in the ant colonies. There's plenty of time-plenty of ants, too-and cost is no object.

Yes, it's all right for the ants, but will it work for you? Don't you need a better method of moving? To save your time, money and manpower?

Barrett Lift-trucks and Skids enable you to move things fast-not piece by piece, but as unit loads. Hence, one worker does as much as 3 or 4.

And remember: there's no repeated piling and unpiling to run up the time and cost of materials handling. With Barrett equipment, you stack it once and it's done.

Let a Barrett engineer show you how to make moving a smooth, efficient part of your production scheme. His experience is yours to command - at no obligation whatever.

BARRETT-CRAVENS COMPANY Chicago 23, Illinois 3280 West 30th Street Representatives in All Principal Cities

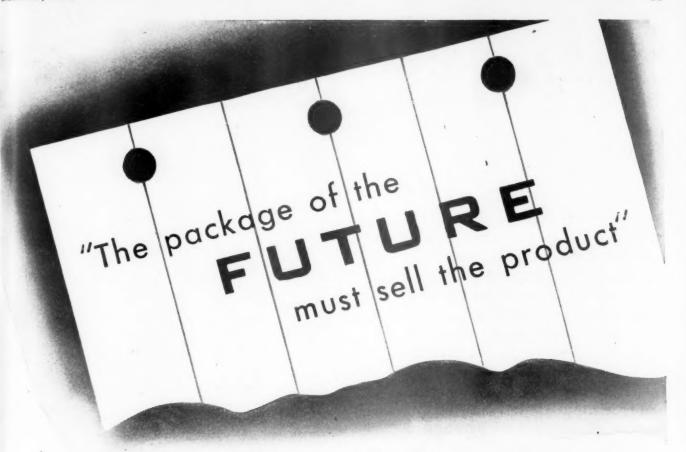
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There is a free copy the Barrett Junior Cal log waiting for you.



ING



FOR OVER 80 YEARS, Gair has been a major contributor to the art of packaging. Many of the great industries of America and the world have turned to Gair to solve their packaging problems. Many an obscure product has achieved international distribution due to the ingenious packaging ideas of Gair — from the cracker barrel and hoop skirt era to frozen foods.

The principles of packaging that are meeting with rigid war-time standards will be utilized in packaging everything from pencils to plow shares. Send your present and postwar packaging problems to Gair.

Appealing, appetizing designs will sell the product. This Sunshine Fancy ASSORTMENT is printed in full color right on Gair Patent coated paper board. Another famous Gair design and product. Write for Printers' Ink article by Egmont Arens industrial designer in which this Package appears.



WASTE

WRITE FOR BOOKLET "FASHIONS IN CARTONS"

PAPER

ROBERT GAIR COMPANY, INC., NEW YORK . GAIR COMPANY CANADA LIMITED, TORONTO

Folding Cartons • Box Boards • Fibre and Corrugated Shipping Containers

MARCH

LAY-SET TAKES

Some machines are constructed with small-diameter sheaves and numerous reverse bends which are hard on wire rope. But that is exactly where Hazard LAY-SET PRE-FORMED shows up to its best advantage. Being preformed, LAY-SET resists twisting or squirming in sheave grooves. Being free of internal stresses, it can take the bends without undue fatigue. All around, Hazard LAY-SET PREFORMED is a safer, better wire rope. Specify it for your next line.

> WILKES-BARRE, PA. ATLANTA CHICAGO DENVER FORT WORTH LOS ANGELES **NEW YORK** PHILADELPHIA PITTSBURGH PORTLAND SAN FRANCISCO TACOMA

HAZARD WIRE ROPE DIVISION AMERICAN CHAIN & CABLE BRIDGEPORT



HAZARD LAY-SET Preformed WIRE ROPE in small

"WELCOME TO BURMA ... COURTESY OF THE HAIRY EARS"

"The Army Engineers are doing a big job in India. They are building a new route through Burma to replace the old road long since captured by the Japanese.

"Built as only American engineers and machines can do it, this new route crosses India's eastern border, crawls along her valleys and winds snake-like up the Himalaya slopes. It traverses malaria-infested valleys, then rises to 4,000-ft. elevations.

More Modern Methods than on Burma Road

"The new road is an example of American genius. The Army Engineers here put road building on a mass-production basis. When they sent a machine ahead to do one job they never let it come back over the same piece of road the second time.

"The 'Hairy Ears' moved in through the tea fields into India's Assam Province. They set up their advance camps, unloaded machinery, worked seven days a week through incessant rain and temperatures that soared to 130°,—and griped to the high heavens as good soldiers will. With grim humor one corporal named his bulldozer, with neat white letters, 'My Assam Dragon.'

"The supply of wire rope was most important, because cable-controlled machines were doing all the work. American-made <u>preformed</u> improved plow steel rope gave long-life through its ability to resist bending fatigue and drum crushing. These engineers found that <u>preformed</u> sometimes far outlasts non-preformed. Supplying it on the new Burma Road no doubt saved both time and valuable cargo space in the ships which had to transport it."

ome machines are necessarily designed ith small sheaves and reverse bends. Y-SET capably withstands the punishment imposed by such conditions.

MARCH

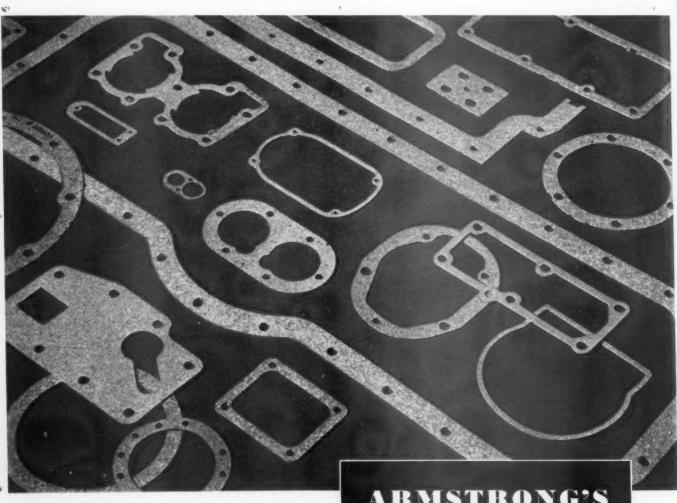
ARMSTRONG can meet your gasket requirements —now and post war

THE many gaskets we are making today for military equipment are substantially the same as you will require in peacetime. So you can depend on Armstrong for cork gaskets for your postwar production, because we face no reconversion problem.

Cork is recommended wherever there is need for a resilient gasket that is compressible, stable, and resistant to liquid penetration. An added feature of cork is its low cost. The country's largest manufacturer of cork gaskets, Armstrong makes many different kinds of cork compositions. These are available either plain or coated with oil and graphite for use as oil seals . . . coated with resins, or synthetic rubber, for imperviousness to certain liquids and gases . . . or laminated with cloth, treated paper, or fiber for special applications.

For specification and application data about cork and other Armstrong gasket materials, write for a copy of "Gaskets, Packings, and Seals." Address Armstrong Cork Company, Gaskets and Packings Department, 7203 Arch Street, Lancaster, Pennsylvania.

CORK COMPOSITION GASKETS



ARMSTRONG'S INDUSTRIAL PRODUCTS: GASKETS, PACK-INGS, SEALS, and MECHANICAL SPECIALTIES of Cork, Synthetic Rubber Compositions, Cork-and-Synthetic-Rubber Compositions, Cork-and-Natural-Rubber Compositions, Fiber-Type Materials, and Rag Felt Papers • RESILIENT SURFACINGS for desks, bars, counters, etc. • FLOORINGS for buses, railway cars, etc. • TEXTILE MILL SUPPLIES • SHOE MATERIALS • ADHESIVES • GLASS INSULATORS

ARMSTRONG'S
GASKETS · PACKINGS
AND SEALS



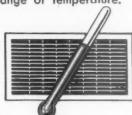
QUIET

CAREYDUCT "soaks up" sound
... hushes air noise... won't
"telephone" fan or other
noises... is 40% to 50%
quieter than ordinary duct.



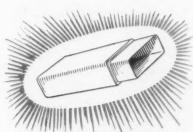
EASY, LOW-COST INSTALLATION. Careyduct eliminates six labor operations. Uses simple, factory or job-built fittings. No special tools. Adapts to standard grilles and dampers.

Careyduct delivers either hot or cold air with a minimum change of temperature.

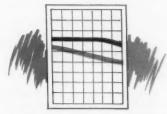


Carey duct—an insulated duct made of asbestos—can be used in smaller sizes because it handles higher velocities quietly and efficiently. Careyduct—being 40% to 50% quieter—can handle velocities up to 2500 feet a minute easily and quietly compared with a maximum of 1400 feet a minute for ordinary duct.

Careyduct is proving itself today on many large industrial and governmental installations. Write for engineering data on capacities, characteristics and specifications.



CAREYDUCT itself is trim, smooth, good looking. Or it can be painted or decorated to harmonize with any interior.



LESS FRICTION-LOSS BY TEST. Careyduct's smooth surface and flush joints eliminate leakage, "breathing" or vibration. It's fireproof.

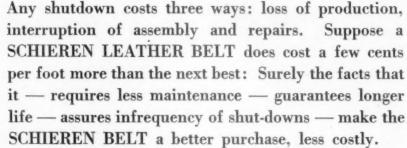
THE PHILIP CAREY MANUFACTURING COMPANY LOCKLAND, CINCINNATI, OHIO



IN CANADA: THE PHILIP CAREY CO., LTD. OFFICE AND FACTORY: LENNOXVILLE, P.Q.

Other Carey Products: Industrial Insulations * Rock Wool Insulation * Asbestos Shingles and Siding * Asphalt Shingles and Roofings * Built-up Roofing * Roof Coatings and Cements * Waterproofing Materials * Asphalt Tile Flooring * Pipe Line Felt * Expansion Joint * Asbestos Wallboard and Sheathing * Miami-Carey Bathroom Cabinets and Accessories.





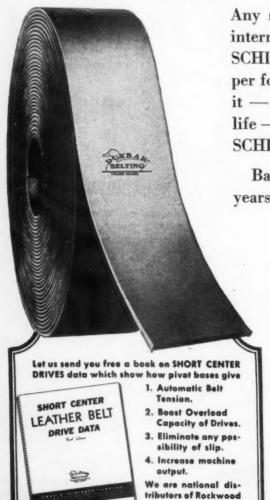
Back of SCHIEREN BELTS is a know-how of 75 years standing. Each phase of production—from the

raw hide to perfected and finished belt — is earnestly supervised by experts under the highest standards. That's your guarantee that—come water, oil, wear or other hazard—your Schieren Belt will continue delivering, with a bull-dog grip, extra RPM over a long, busy life.

May we quote on your next belting requirement?



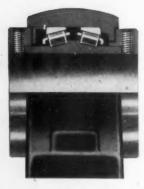
31 FERRY ST., NEW YORK 7, N. Y. 60 Front St., W., Toronto, Ont.







DODGE-TIMKEN TYPE "E" BEARINGS



Genuine Timken tapered roller bearings handle any combination of radial and thrust loads in normal installations.

Extra long inner race distributes the load.

Time-tested method locks bearing on shaft.

Simplified labyrinth seals protect against dust, dirt and loss of lubricant.

Factory assembled, adjusted, lubricated, ready to install.

TRANSMISSIONEERING achieves a new combination of high performance with low cost! Type"E"is the lowest priced Timken-Bearing-equipped mount on the market. There is no sacrifice of quality; the low price is the result of Dodge Transmissioneering skill, and efficient, volume production.

Precision-built, rugged, dependable, the new Type"E" bearing assures 30,000 hours or more, of service, under conditions for which it is adapted. It offers superior load carrying and high speed capacity.

Type "E" bearings, completely assembled, lubricated and adjusted at factory, ready for immediate use, are available in Dodge distributors' stocks. Call the Dodge

Transmissioneer in your territory for information about these, and other new developments in power transmission equipment, to help you increase production efficiency and lower your power costs.





There are 210 Dodge factory graduate Trans-missioneers, located in principal cities, to show you new and better ways of transmitting power.

Sign of the Dodge



DODGE 30,000 TRANSMISSIONEERED

MARCH

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How to pack more spring into less space has always been a problem in product design. And today, when so many plans call for a reduction in product size or packing more power into a unit of the same size, the problem is even more serious. The nested spring is often the answer. It eliminates, in many cases, changing the size or design of the assembly in order to provide working space for a spring of increased capacity.

Designing nested springs requires more than just fitting one spring inside another. Whether to use round or square wire or a combination of both is involved. Extremely careful attention must be given to proper stresses and clearances. These, plus many other factors, emphasize the need for skilled spring engineering, and that's why so many product planners bring their problems to MUEHLHAUSEN SPRING CORPORATION, (Division of Standard Steel Spring Company), 675 Michigan Ave., Logansport, Ind.

Send for free booklet on the importance of spring design.

To improve product performance, use MUEHLHAUSEN



"Material Spoilage Was Greatly Reduced When We Installed **BUSS FUSES**

In Our Heat Treating Furnace Circuits"

-Mr. John Burchfield, General Maintenance Supt., Iron Fireman Manufacturing Corp.



Why BUSS Fuses greatly reduce or entirely prevent needless blows

The fuse case is designed to insure good contact on the link, even when the fuse is renewed by an inexperienced person—and it is so designed that vibration or heavy overloads or the constant heating and cooling of the fuse will not permit poor contact to develop. Thus excessive heating, which causes fuses to blow needlessly, is prevented.

The fuse link used is the famous "BUSS Super-Lag." It has lag-plates attached to it. These give it a time-lag so long that it will reduce to an extent not possible with any other renewable fuse, the number of shutdowns caused by needless fuse blows.

Prevent future trouble in your plant - by doing this today

Pass the word along that all purchase records dealing with circuit protective devices should be immediately changed to call for BUSS Super-Lag Renewable fuses. Then, as fuses are replaced or new installations made, your plant will automatically get the benefit of the carefree, trouble-proof protection that BUSS Super-Lag fuses afford.

BUSSMANN MFG. CO., ST. LOUIS 7, MO.

Division McGraw Electric Company



Why BUSS Fuses Don't Blow Needlessly



10 FEATURES

in the design of the FUSE-CASE help make it possible

and



The SUPER-LAG

development in the FUSE-LINK completes the job.





Extra Long Life

Many factors determine the real cost of a bearing. Very often the one with the lowest purchase price is the most costly to buy. To determine real value you start with the selling price. Then add the installation costs...plus the type of performance delivered...plus the length of service. Add all of these and you learn your true cost. The most expensive bearing is the one that fails.

No matter how you compare Johnson ELECTRIC MOTOR Bearings you will find them tops. Correct in design and tolerance, they slip right into place with a minimum of effort. Cast in a special high-lead alloy, they deliver smooth, quiet performance with a minimum of attention. When properly installed and lubricated they usually outlast the motor.

Why not try a set on your toughest job? Test them in comparison to any you have ever used. See for yourself why Johnson Electric Motor Bearings are your most economical buy. Reasonably good service is available from stock.

Catalogue

76 Pages—fully illustrated—describes the most complete bearing line on the market.

Write for a copy.

JOHNSON SLEEVE BEARING 450 S. MILL STREET



BRONZE HEADQUARTERS NEW CASTLE, PA.



with natural rubber and a variety of synthetics in
one exacting job after another for the Army and Navy has revealed
some truly amazing possibilities. Our success in meeting the requirements
of the armed services to date has been recognized by four "E" awards. Perhaps we can help
you to win "the E of Public Acclaim" when you are ready to proceed with
peacetime merchandise. Acushnet Process Company, New Bedford, Massachusetts,

Processors of Precision-Molded Rubber Goods.

In rubber, remember the name - ACUSHNET





The best "soft" hammers and mallets are rawhide—tough, resilient, long-lasting C/R mechanical rawhide. They strike effective blows without battering or marring... without fatiguing re-coil. They hold their true striking surfaces. Sizes and weights for every need. Hammers are malleable iron with replaceable C/R Rawhide insert faces.

Write for Catalog Sheets.

CHICAGO Rawhide MFG. CO.
1294 ELSTON AVE. * CHICAGO. ILLINOIS.

F.O.B. Hilosopy of bruying

AMES O. PECK, President of the James O. Peck Company, research organization, recently addressed a conference of the National Industrial Advertisers Association in Chicago on "Why You Will Find Field Research Helpful in Marketing Your Products". Mr. Peck's thesis is that many companies "run dry" in their sales program because they spend so much time in studying their own and competitors' products instead of studying customers' problems. Most Purchasing Agents will endorse that statement. But in developing his thesis, Mr. Peck goes out of his way to disparage Purchasing Agents as customers, who, in his marketing scheme, "frankly admit that they buy most commodities on price and the personality of the salesman"; anything more complicated than that is referred to "the engineers or production men concerned with using the product". The function of the P.A. is defined as to "protect other people in his organization from the boredom of competitive price and specification sales stories". Perhaps that attitude is another reason why sales campaigns bog down. On another page in this issue is a report of field research done by the Economic Development Committee of Louisiana, typical of similar projects in other territories, that wisely goes to the Purchasing Agents Association membership as the true representative of its potential customer field.

Peck's catch phrases, where he remarks that sales executives "bemoan the fact that they have a purchasing agents' item to sell." He doesn't define the term, but since the function of field research is described as lifting salesmanship and products "out of the price and entertainment rut", the inference is rather obvious. A little actual research in purchasing departments as to what really constitutes a "purchasing agents' item" and what doesn't, would blast the fallacy of this classification and make Presi-

dent Roosevelt's Electoral College vote look like a photo finish. When management sets up a real purchasing department, the whole list of requirements becomes "purchasing agents' items". Management doesn't set up a competent buying staff merely to protect its engineers from boredom or to filter through to them "the rare salesman who seems to be in a position to help". (Incidentally, Purchasing Agents generally have a higher opinion of the sales fraternity than this phrase seems to imply.) It is one of the most curious and persistent concepts of functional business organization that salesmen should sell, accountants should account, producers should produce, but Purchasing Agents should do almost everything but purchase.

NE more gem from Mr. Peck's dissertation: "Field research shows that the purchasing agent is just as sorry for himself as you (sales and advertising men) are for yourself." Who's sorry? The mourners' benches that we have seen in business offices are generally reserved for the salesmen.

YES, we have shortages. But they are not as serious as it seems to one Elwood Weeks, who recently took pen in hand and wrote to the editor of the Atlantic City (N. J.) Union as follows: "I see the Freeholders have got themselves a Purchasing Agent and will pay him \$6,000 a year. I didn't know that they could buy merchandise to that amount on the market."

WE are interested, too, in the philosophy of the Electric Boat Company, which recently sent an "Award of Merit" to all its suppliers to show its appreciation of their part in the tremendous task of building submarines for the Navy. The response was terrific. Grateful and astonished letters poured in. Several companies wrote that the EBCO certificate was being framed and displayed for use as a morale

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booster in their own plants. Typical Comment: "Needless to say, it is things such as this that make us feel that we are part of this job, and we want you to know that the employees and management appreciate it very much."

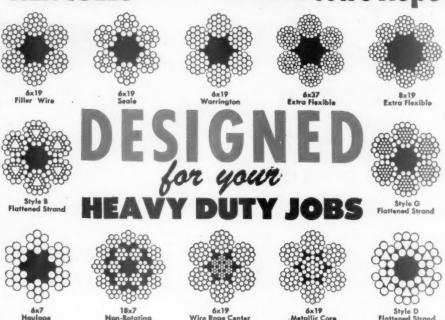
THANKS to the Editor of Oregon Purchasing News, who refers to Purchasing in his January issue as the "internationally read 'Bible' of Purchasing Agents". The quote from these pages that prompted this gracious reference tends to support the editor's contention that this publication is read—and used in purchasing work. Which is a source of deep satisfaction as we sit down at the typewriter to put together another issue for our international reader audience.

AYBE we can claim additional evidence from the January issue of *Pacific Purchasor*, where we find a comprehensive article entitled "Get Acquainted with Plastics." It intrigued us especially because this is the identical title used on a widely acclaimed discussion of the same topic by our own George Henry in the September issue of Purchasing. The P. P. article is signed by one George H. Brother. The H, we presume, stands for Henry's.

FEW weeks ago we had the A privilege of witnessing, for the first time, the impressive installation ceremony used by the Connecticut Purchasing Agents Association for the induction of its new officers. Prepared some years ago by Fred Space and Ed Cobb of that Association, it was so well received that it has become an annual feature of the installation night meeting. It may already be familiar to you, for we understand that it has been copied or adapted by several of the other Association groups, which is a readily understandable tribute to an excellent idea.

In this ceremony, each of the new officers rises in turn and reads a statement of the duties of his office and his responsibilities in the successful administration of Association affairs, concluding with the pledge: "This I accept as my commission." F.O.B. was genuinely impressed, but also a little puzzled, having been brought up in the belief that it is unethical for a Purchasing Agent to accept commissions.

"HERCULES" (Red-Strand) Wire Rope



"HERCULES" is our trade name for the very best heavy duty wire rope that we are able to produce. Best in quality . . . best in design . . . best in fabrication. So that it can be recognized by sight, it is always made with one Red Strand.

As "heavy-duty" service covers a wide range of working conditions, this wire rope is manufactured in numerous constructions, as illustrated above. Most of these constructions can be furnished in either a hemp center, a wire rope center or a metallic core.

Preformed: "HERCULES" (Red-Strand) Wire Rope is furnished either Preformed or Non-Preformed. Under any conditions, the Preformed is easier and quicker to install and safer to handle. For most purposes it is decidedly longer lasting.

In "HERCULES" there is a right rope for every heavy-duty purpose. You will make no mistake if you let the Red-Strand be your Wire Rope Guide. Its use will help you save time . . . reduce operating cost . . . increase safety.

Maximum wire rope efficiency is obtained only when the rope used is of the construction, grade and type best suited to the particular conditions under which it is to work. Ability to make proper selection comes with experience. We shall be glad to have you consult with us on any wire rope problem you may have.





If you're buried in plans for improving your present product or hatching a new one, Continental's Plastics Division can bring you out of the dark.

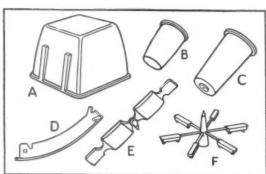
Whatever features your product requires—beauty, durability, lightness, toughness, or anything else you can depend on our engineers, designers and research men to do the job right. Their years of experience and close contact with the foremost manufacturers of raw materials guarantee you the best service possible.

Our Plastics Division is equipped to fabricate a wide range of products in the most efficient and economical way—by compression, injection, extrusion, lamination or sheet forming.

So count on Continental for the latest and best in plastic products. You'll find an alert, progressive organization giving sound, practical advice and assistance at all times.

Tune in "REPORT TO THE NATION," every Saturday over CBS coast-to-coast network.

CONTINENTAL CAN COMPANY, INC. HEADQUARTERS: Cambridge, Onto Sales Representatives in all Principal Cities COMPRESSION - INJECTION - EXTRUSION SHEET FORMING - LAMINATION



(a) Film development tank—compression; (b) Outside shell for vaporizer—compression; (c) Sales ticketholder—compression; (d) Segment for circular file—injection; (e) Hairbrush handles—injection; (f) Drawer pulls—injection.

Other products of Continental Can Company: Metal cans for food and other products; fibre and paper containers; crown caps and cork products; machinery and equipment; special war cans and weapons.



You don't really know Brass until you've worked with it

Remember your introduction to Brass? As a boy perhaps, in a manual training class...or possibly on the bench of your home workshop. Wherever it was, you realized then that the yellow metal was not only royal in appearance, but that it was a workable metal, too.

It seems that Brass was especially made to be machined and worked and formed into so many useful things that people need—thanks to copper-alloy metallurgy that has developed a variety of Brasses with properties that manufacturers find so indispensable: Brasses that can be worked hot or cold, that can be forged, rolled, spun, stamped, pressed, coined, upset or drawn; Leaded Brasses that machine at top spindle speeds...ductile Brasses that could be formed or shaped with the pressure of your fingers...or hard spring Brasses that can be stressed through millions of cycles without danger of failure by fatigue.

Brass, and a host of other copper alloys, are needed elsewhere now. But with peace (continued on next page)



Anaconda Copper & Copper Alloys

Planning for Postwar Markets?

weigh carefully the advantages of Copper, Brass and Bronze



(continued from preceding page)

these metals will return, presenting both an opportunity and a challenge...the opportunity to build more serviceable, longer-lasting products for our postwar needs...and the challenge to manufacture them at low cost—to be sold competitively, and at a profit.

When redesigning or retooling for these postwar products, take advantage of the manufacturing economies that Copper, Brass, Bronze and Nickel Silver have to offer. These strong, tough, workable metals make possible increased life for punches, dies and forming tools on press work; longer runs and less down-time for tool regrinding on screw machines; greater uniformity of parts; low-cost brazed, soldered or welded assemblies; and a non-rust base for enameled, lacquered or plated finishes.

The American Brass Company produces Anaconda Copper, Brass, Bronze, Nickel Silver and special Copper Alloys in practically all commercial forms—plates, sheets, strips, wire, rod and tubes; special extruded, rolled and drawn shapes; hot pressed forgings and pressure die castings. Our Technical Department will assist you in every way possible to determine the "one best metal" and its most practical form for the job you have in mind.

THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

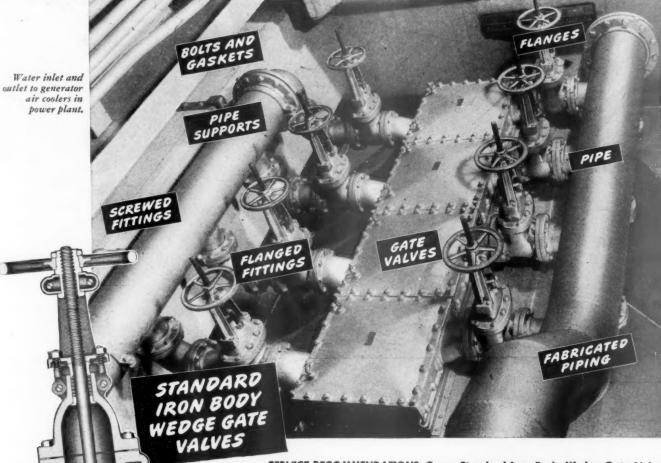


Anaconda Copper & Copper Alloys

What's Your Piping Materials Problem? ... CRANE Has the Answers!

ONE SOURCE OF SUPPLY
ONE RESPONSIBILITY FOR ALL PARTS
ONE STANDARD OF QUALITY

No matter what your need in piping materials...your Crane Branch or Wholesaler can meet it. One order covers all requirements at any time. You choose from the world's greatest line of piping materials—in brass, iron and steel. You help assure the best piping installation because all parts are of uniformly high quality—backed by a single responsibility. Not only do you simplify and speed deferred replacement work by using Crane complete piping materials service—but you get full benefit of Crane Co.'s 90-year experience in the piping equipment field.



SERVICE RECOMMENDATIONS: Crane Standard Iron Body Wedge Gate Valves with brass trim are recommended for steam, water or oil lines; all-iron valves for oil, gas or fluids that corrode brass but not iron. Made in O.S. & Y. and Non-Rising Stem patterns.

Working Pressures

Screwed or Flanged Valves **Hub End Valves** Size of Valve Cold Water, Oil, Cold Water or Gas Saturated or Gas, Non-Shock Non-Shock Steam 125 pounds 2 to 12 in. 200 pounds 200 pounds 14 and 16 in. 125 pounds 150 pounds 150 pounds 18 to 24 in. 150 pounds 150 pounds

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Ill. • Branches and Wholesalers Serving All Industrial Areas







^{*}For steam lines larger than 16-inch, Crane 150-pound Cast Steel Gate Valves are recommended.

SHII



Rely on National . . . with its expert knowledge of the mechanical and chemical requirements of each adhesive application . . . to provide trouble-free operation at high speeds.

What are the clean machining qualities of an adhesive? Many. Very many. When rapidly rotating rollers have a churning action, the adhesive must be non-foaming. When exposed to air, it must not skin over . . . must not crystallize so rapidly that it builds up on glue pots, brushes, wheels . . . must not corrode metal or harden rubber parts . . . must not break down under continuous agitation or coagulate in the machine or during normal periods of storage.

In all transfer and stencil applications of glue, the adhe-

sive must be non-stringy so as to break short and clean; and must be non-creeping to adhere strictly to the stencil pattern. At high speeds, the adhesive must neither throw from the applicator nor spatter the work in any way to cause labels or cartons to 'lock' . . . and interfere with subsequent pick-up, folding and filling operations of labeling, envelope making, bag sealing, carton filling, etc.

You can safely rely on National . . . with its practical background of adhesive applications . . . to provide the clean machining qualities needed to handle your specific job efficiently at its highest level of production.

Offices: 270 Madison Avenue, New York 16; 3641 So. Washtenaw Avenue, Chicago 32; 739 Battery Street, San Francisco 11, and other principal cities.



EVERY TYPE OF ADHESIVE FOR EVERY TYPE OF ADHESION

Purchasing Previews A Washington Report...... for Purchasing Agents

March 1, 1945

SHIFTS IN WAR EFFORT AND PROCUREMENT POLICY

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Military services and WPB are considering the inevitable shift in the war effort from the European fronts to the Pacific. Procurements will change in nature as the terrain of battle shifts. The Pacific war will also be a land front war, not an all-ocean war.

Millions of men will be shifted to the Pacific area. A China front will be established. The War Department will maintain its level of procurements at 75% or 80% of war peaks. This will not be an overnight development. It will take time to establish a land front in the Pacific, to transfer armies from the West to the East.

Time lag will likely produce a marked let-down for several months as the changes in procurements grind around and finally are stabilized. The period of softening will present a crucial problem to the military services.

Major question is whether the War Department can sustain its procurements at a high level over a period of time. If they fall far short of a full war economy, large-scale reconversion will result. This, the military feels, would lead to a rapid deterioration in the war effort, even to the extent of barring complete victory.

War agencies will watch labor markets closely to guard against unemployment. Effort will be made to de-emphasize cutbacks and surpluses — to place emphasis on war needs and the military difficulties of a Far Eastern war.

Some forecasters see the labor market falling apart at the end of the war in Europe. Others claim that it will continue very tight. A median course appears more substantially accurate — a fairly considerable release of workers for a period of time after the war in Europe is over, with a gradual tightening thereafter, becoming very tight if the war in the Far East takes a year or two to end.

SURPLUS DISPOSAL POLICIES ARE STILL UP IN THE AIR

Trend on surpluses shows disinclination toward recovering materials and equipment shipped out of the country. Latest indication was sale of 58,000 machine tools which had been

lend-leased to Britain. Problem of re-absorbing and disposing of huge surpluses accumulating in the U.S. proper discourages return of material from abroad.

MARCH,

*SILV

tific

Disposal of surplus becomes an increasingly puzzling issue. Each new approach to the problem quickly gives rise to a major scandal. Negotiated sales and auctions reveal spectacular profits to buyer and wide spread between Govt. selling price and price to the ultimate buyer.

Change in RFC status adds to uncertainty in respect to vast holdings of plant sites and equipment and material stockpiles held by DPC and other subsidiary corporations.

PREFERENCE LISTS ADD TO SURPLUS DISPOSAL CONFUSION.....

Surplus Property Board is talking down the size of surplus problem. Effort is aimed to counteract the phenomenal figures which are generally bandied about.

Approach of the Board is that it is impossible to ascertain at this time what the quantities of surplus will be. Using an arbitrary figure of 100 billion dollars of surplus, they point out that half will be strictly military items with no value other than scrap. Of the remainder, approximately five billion will be "merchandisable". The 45 billion dollar difference is in industrial plants, tools and equipment.

One of the most vexing problems is the preference list prescribed in the Surplus Property Act. A system of priorities is being devised so that states, municipalities, hospitals, veterans, etc., will be able to purchase before the surpluses become available for the general market. Preferred groups will not be given any price advantage — with the one major exception of hospitals and public welfare institutions.

ECONOMIC SHADOW-BOXING IN STEEL PRICE BOOST

OPA has come to the end of a long game of tag. Boost in steel prices is described as reflecting only increases in production costs, not the recent wage boosts granted by WLB.

Behind this governmental facade lies the series of legalistic delaying tactics which have become the universal technique of slowing the process of war inflation. The story, in brief:

- 1. Threat of steel workers to strike in December 1943 was bought off with promise to review wage demands and make any adjustment retroactive.
- 2. Finding by OPA in April 1944 that increased production cost factors warranted price increase. In view of practical certainty of wage boost, industry urged that OPA action should be delayed to take this added cost factor into consideration.
- 3. Emergency action on December 30, 1944, granted steel workers an increase, about 7 cents an hour. Industry had accumulated a fund to take care of the retroactive feature. If a wage finding were not issued, this reserve would have been dissipated in taxes.
- 4. OPA now proceeds to allow increase in steel product prices, amounting to about 5%. This eliminates the continued necessity of making hardship price increase allowances to individual companies.

Of interest and significance is the fact that the delays in permitting price increase continued for well over a year, and that OPA will not concede that wage boosts had anything to do with it — that wage increases must be absorbed by industry.

SILVERSTITCH YOUR CARTONS

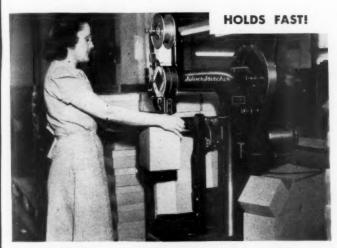
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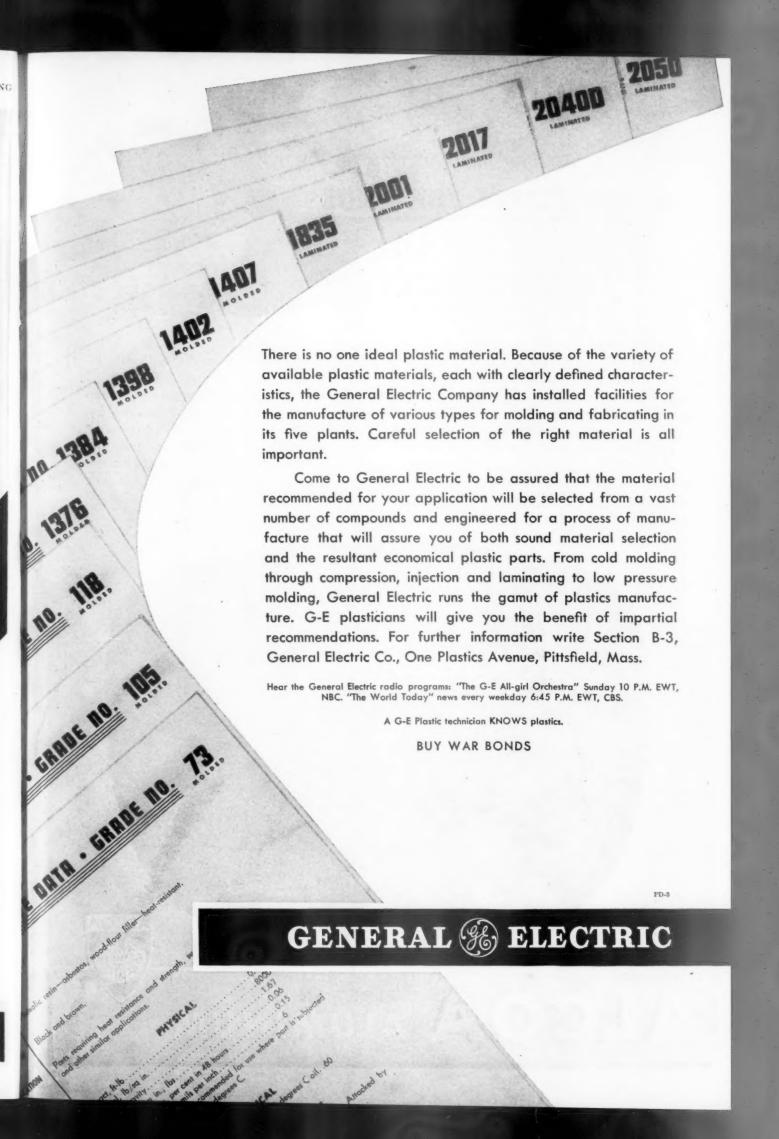
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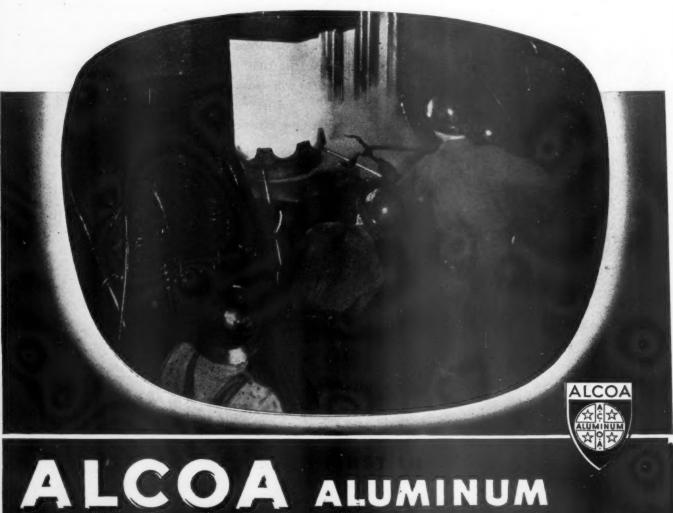
What's a pattern maker got to do with ALUMINUM FORGINGS?

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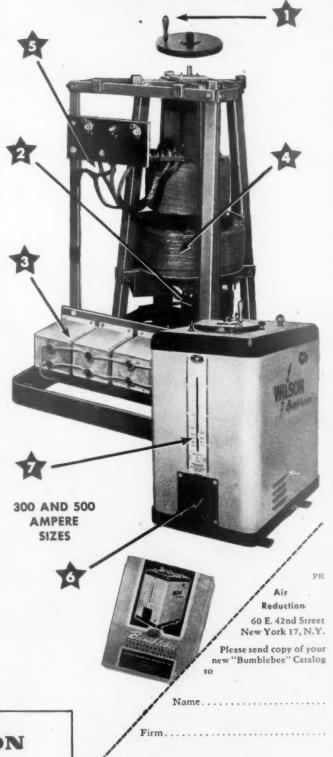
- Precise, Stepless Adjustment of Welding Current to any value within NEMA range, provided by easy-turning crank.
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PURCHASING

MARCH, 1945

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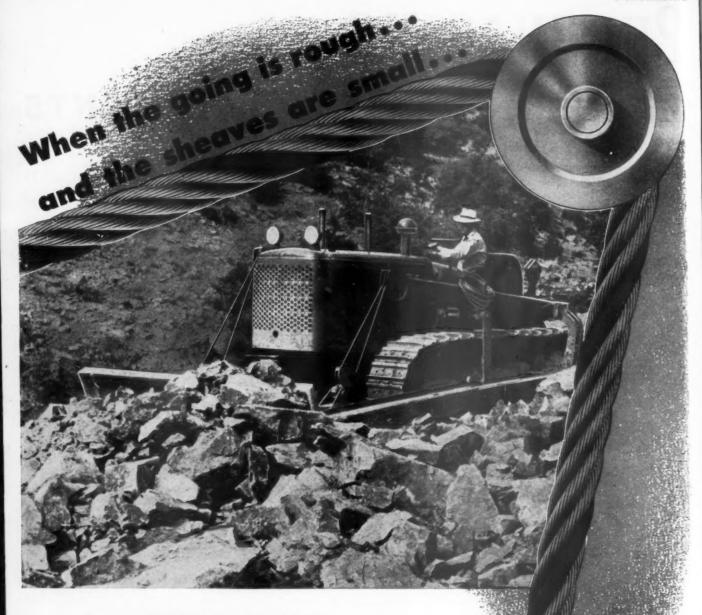
Front cover photo by Brown Bros., New York

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PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

VOLUME XVIII. NUMBER 3, 35c per copy \$3.00 per year, \$5.00 for 2 years. Extra postage for Canadian and foreign subscriptions \$1.00 a year. Contents are indexed weekly and annually by the Engineering Index Service.

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SCANDAL IN SURPLUS

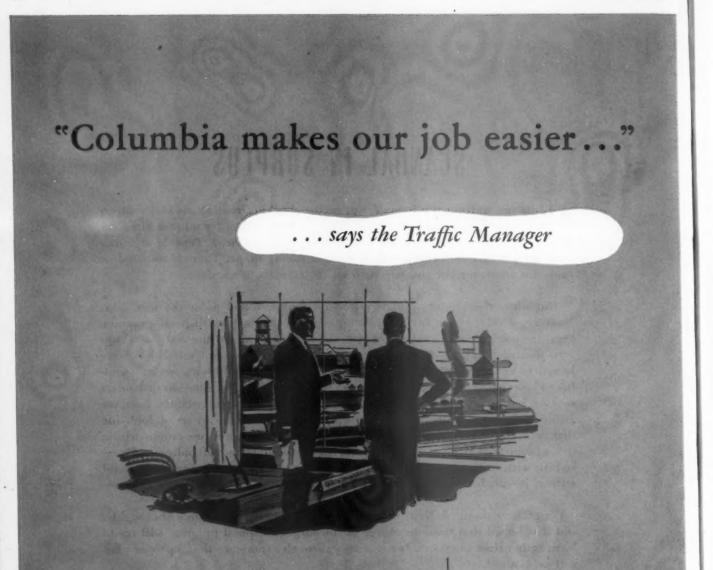
ALL is not well on the home front, as the shocking revelations of profiteering in surplus disposal reveal. The unimaginative techniques thus far developed have been proved both inadequate and inefficient. Topside organization and policy have been painfully slow in taking shape. There is tremendous room for improvement and urgent need for constructive action.

But while the recent scandals are to be deplored, and point the way — at least negatively — for further development of the surplus disposal program, they are not a proper ground for general condemnation of the Surplus Property Boʻard. Scandals were to be expected. Opportunism and selfishness were bound to assert themselves with billions of dollars literally lying around waiting to be exploited. Every law that was ever written has had some sharpshooters seeking new angles and loopholes before the ink is dry. Legislators, however astute and well-meaning, cannot hope to see all the implications of lobbying that comes in the form of expert advice and even from pressure groups within the administration itself. Nor can they devise a blueprint of policy and procedure with any assurance that it will work out as planned; for buying and selling, in surplus disposal as in every other transaction, involves two parties.

Congress is doing well to probe the malodorous circumstances thoroughly, and it is hoped that those in charge of the surplus disposal program will try to learn rather than to excuse. For it is only through experience that a proper plan will be evolved.

Fortunately these scandals break at the beginning of the problem. Stupendous as present quantities of surplus are, they are but a tiny foretaste of the totals with which we shall eventually have to deal. We are paying a relatively small price for experience now. Our greatest concern is that these mistakes will not be repeated, opening the way for waste and profiteering. Out of them may come a sound and workable program for putting surplus back to work in the public good, with a maximum return to government and a minimum impact on legitimate industry. But if the mistakes are repeated it will be high time to turn the probe on the administrators instead of individual offenders.

Stuart F. Nemity



Wartime transportation peaks have created many problems for manufacturers dependent on the steady flow of chemicals to their plants. Columbia's efficient Traffic Service has done much to minimize these problems for its customers, and to ease their traffic supervision tasks. That's why many a Traffic Manager is in full accord with his company's policy of favoring Columbia as its source of chemical supplies.

By their efficient handling of an unprecedented volume of traffic, the freight carriers have earned the thanks of the entire nation. They stress, however, the importance of the co-operation they have received from their customers. The job has indeed been so vast and so outstandingly successful that all Traffic men—both those employed by carriers and by their customers—can take pride in their contribution to America's war effort.



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A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers



Let's start looking at this matter of buying and selling from the salesman's first point of contact, when he walks into the reception room. It's obvious that Public Relations start there, and that the first impression may color the entire business

relationship. Some Purchasing Agents have seen to it that first impressions are right, and that a favorable relationship is established even before the interview. The article on page 74 gives two practical illustrations of how this can be done.

Industrial purchasing executives can Make or Break the post-war program for maximum production and employment. That testimony comes from Wendell Berge, Assistant Attorney General for the United States, and he supports his statement with impressive evidence of the part that purchasing men must play in shaping the industrial world of the future. And he warns Purchasing Agents that they had better exert their constructive influence, since the alternative of monopoly and regimentation will eliminate the purchasing function from business. Here is a hard hitting article by a hard hitting crusader for sound business economics. You will not want to miss it. Turn to page 71.

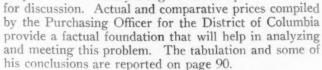
Louisiana Buyers have taken a progressive step in support of intelligent business development in their territory, by analyzing out-of-State purchases as a measure of potential market opportunities. All successful marketing is based on market analysis, and no one is in a better position to present the facts than the man whose business it is to buy. A summary of the report appears on page 80.

Leo Parker's discussion of legal factors in purchasing, on page 94, deals with the F.O.B. Point specified in purchase orders and contracts. Recent litigation and court decisions show that a great deal more than freight charges is involved in setting the point at which title passes to the buyer. There's the matter of responsibility for loss or damage to shipments, and some far-reaching interpretations of tax liability, for example. Familiarize yourself with this basic law.

There's been a lot in the papers about the Army's new War Goods Pricing policy. No one is better qualified to explain it than Col. Fred C. Foy, Procurement Director for the Army. His article on page 87 tells what it is, how it works, and what it hopes to accomplish.

Have priorities and government reports been a headache in your purchasing department? The answer is probably 'Yes', but let's take a look at the other side of the picture too. J. C. Williams says, on page 101, that no questions have been asked that a good Purchasing Agent shouldn't be able to answer, and the regulations have forced a good many concerns to improve their own business methods. Profit in Priorities suggests a way for the buyer to capitalize on wartime experience.

Business statistics and price indices do not tell the whole story when the buyer puts his market basket on his arm and sets out to shop for Food Supplies. And that is a good point to bear in mind when the subject of commissary budgets comes up for discussion. Actual and comparative prices con

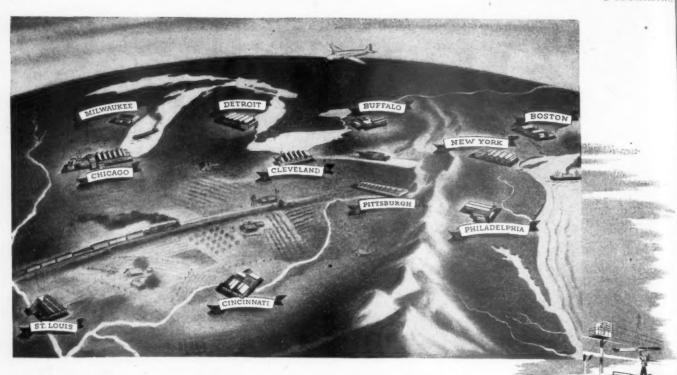


New Products and Materials that the Purchasing Agent may find on his shopping list call for intensive and intelligent study. In this issue you will find informative articles on industrial plywood (page 84), plastics (page 91), and fluorspar (page 111). They are well worth your careful reading.

This month's guest editorial, by N.A.P.A. Vice President Carl Wuerpel of Fort Worth, Texas, makes the point that the supply line for industry, as well as for war, must be maintained. And that's a job for the purchasing man, a continuing responsibility inherent in the purchasing function. You'll find the article on page 79.

Diminishing Inventories have become a source of concern to the armed services. You'll find a new clause in your next Army contract. Read about it on page 103.

Don't overlook these monthly departmental features compiled especially for purchasing men—the Washington Letter on page 55, with its timely and authoritative preview of official trends on matters affecting industry, as gathered by our Washington office; the listing of Know-How Information, that is yours for the asking, appearing on page 10; and the illustrated summary of New Products and Ideas that are now available for the industrial buyer (page 116), providing a quick and convenient means of keeping up to date on recent developments.



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The Purchasing Agent's Stake In Free Competition

By WENDELL BERGE Assistant Attorney General of the United States

Monopolies, cartels, and industrial regimentation eliminate the function of the Purchasing Agent in business, but constructive purchasing policies hold the key to our industrial future

UR chief postwar concern is to provide jobs through private employment. Jobs will be needed' for approximately sixty million people. Only full production can provide them. We now know that full production can be obtained under a wartime economy, for we have attained it. We also know that it could be obtained in peace if we were to resort to totalitarian methods. But we do not want to resort to such methods. The problem, therefore, is how to obtain full production in peace under a democratic system and by private enterprise methods.

The special interest of Purchasing Agents in this problem, apart from their normal interest as patriotic Americans whose future is bound with the welfare of our country, is obvious. The survival and prosperity of Purchasing Agents as a class of businessmen depends upon the futue of competitive enterprise under free political institutions. would be no need for their function under a totalitarian system. And there is a steadily decreasing need for their services in industries where monopolies and cartels dominate. Purchasing Agents thrive only under free competition.

So Purchasing Agents have a peculiar concern in maintaining an economy free from restraints of trade and monopoly practices. They should be the first to recognize that we cannot have full production and an expanding market if producers have agreed to restrict production, if sellers have agreed to allocate



WENDELL BERGE

Since taking over the job as Assistant Attorney General in charge of the Antitrust Division, Wendell Birge has instituted some of the most far-reaching and important actions ever to be brought against the industrial giants of our age. Involved in these battles are not only the great corporations of America, but all over the world large industrial combines have felt the sting of Mr. Berge's attack on economic privilege. The names of the subpoenas read like the Industrial Who's Who of the Earth.

His work has been the subject of debate in the House of Commons, he has been called upon many times to testify before Congressional committees, his name has been the subject of Axis vituperation, and newspaper accounts of his work have appeared around the world, including South Africa and India. His struggle against Axis penetration in South America and this country has brought him hemisphere-wide

At the age of 41, the youngest man ever to hold the post of Assistant Attorney General in charge of the Antitrust Division, Mr. Berge has received the respect of business both large and small, and of all who believe that monopoly is an ever-recurrent threat to economic freedom and political democracy.

A profile of the author as given in a recent article by Lester Velie in the Saturday Evening Post, says in part:

"His career as a lawyer began in the Wall Street financial district with the firm of Root, Clark, Buckner and Ballantine, legal representative for some of the greatest corporations of America. Berge stayed in Wall Street exactly two years, then went to meet his destiny, a job in the Antitrust Division of the Department of Justice, in the administration of Herbert Hoover.

"When Thurman Arnold came upon the scene in 1938, Berge became his chief assistant and needler, pointing the energetic Thurman's steps in the direction of a crusade against international cartels.

"The young men Berge recruited blossomed into the biggest antitrust staff in history: 250 lawyers and their retinue of economists and stenographers. In Trust-Buster Teddy Roosevelt's day, antitrust boasted exactly four lawyers and three stenographers. What a difference!"

markets and not venture beyond self-imposed limitations, if industrial groups having access to basic technology combine to suppress new developments, or if the market on the selling side is controlled by agreements to maintain high and noncompetitive prices. If we want an economy in which there will be a functional place for Purchasing Agents, then we must have the courage to make our economy really free. We cannot do it merely by talking free enterprise. We will have to face squarely and do something about the restrictions which are piling up to hem in and halt the effective operation of free enterprise.

Purchasing as a Constructive **Business Force**

Purchasing Agents are in a strategic position to do something effective, if they will grasp their opportunity. The immediate postwar period will present an unprecedented demand for almost every conceivable type of product on the market. The buying policies of companies that manufacture and distribute will play a most important part in determining the future of free enterprise. What are they going to buy and from whom are they going to buy it?

Are they going to pursue an overly-cautious policy of buying only old and tried products, ignoring the boundless possibilities of the production of the new technologies? Or, are they going to launch out boldly and promote through imaginative, competitive buying the new products and developments which can be made available? Are Purchasing Agents going to team up exclusively with their old sources of supply? Or are they going to en-

courage new sources of supply through providing an active competitive market for newcomers with new products?

The prospective surpluses should furnish an active stimulus to competitive buying, if purchasing executives are sufficiently alive to the possibilities. There will be approximately twenty billion dollars worth of surplus war plants for sale after the war. Disposal policies already enacted into law require that this property and these plants shall not be disposed of so as to promote monopoly or the concentration of economic control. As a result of these policies, there should be many new companies entering business with converted plants in which they will make new products which they will put on the market. Moreover, there will be many of our existing independent or small business enterprises in a position to offer larger lines of goods, and also new lines, to the buying trade.

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Purchasers Must Encourage New Enterprise

What will be the reaction of Purchasing Agents to these newcomers on the selling side of the market? If Purchasing Agents team up exclusively with their old sources of supply the way will be hard for the newcomers. If this happens, it will place serious obstacles in the way of success of post-war private enterprise. For private enterprise in the years ahead depends on thriving competition both on the selling and buying side, and it can only come about if the buyers provide an active market for the newcomers, and for the new products and processes. It does not seem an exaggeration to say that the great body of industrial purchasing executives can make or break the post-war program for maximum production and employment.

Let us be a little more specific. Where are Purchasing Agents going to buy their aluminum? In the long run their orders will have an important bearing on whether there are two, three or half a dozen aluminum companies producing five years after the war. Where will the magnesium be bought? There are half a dozen sources of supply now. Will buyers give their orders to some of the new companies when they switch to civilian production or will buyers feel bound to deal only with former sources of supply?

What about the multitude of nitrogen products? There are half a dozen plants making these products

72

"The great body of industrial purchasing executives can make or break the post-war program for maximum production and employment."



for war purposes and at costs which are eye-openers as compared with those obtaining before the war. It might pay to look into some of these possibilities. And what about plastics? In the January issue of Purchasing there was a list of nearly 250, many of which are new to most of us. A little imagination in this field of buying should do wonders towards developing new products and new markets.

Cartels vs. Competition

Purchasing Agents also should have a deep concern about the possible effects of international cartels upon our post-war economy. Perhaps to many people cartels sound far off, as though not related directly to the affairs of everyday business. This feeling may especially be shared by those not directly engaged in foreign trade.

But the impact of international cartels extends to almost all American business regardless of whether it is engaged in foreign trade.

Cartel restrictions allocate world territories, prevent American companies from selling abroad, prevent foreign companies from selling in the American market, and prevent independent American enterprise from venturing into the restricted areas. The Department of Justice has now pending approximately thirty international cartel cases. The companies which enter into these cartel agreements, no matter how patriotic and well-meaning they may be, are throwing their weight in favor of a restricted economy. Examples of such agreements are now well known. The companies agree, for example, not to sell pharmaceuticals or chemicals in Latin America because that area is reserved for the German dye trust. They agree not to sell aircraft component parts in France because that is reserved for a European member of the cartel. The central object of these cartels is to Balkanize the world by imposing private tariffs through territorial restrictions.

You can't expand the world trade of this country if American companies are going to enter into private agreements by which they give up foreign markets. And the reason why American companies are willing to give up foreign markets makes these agreements doubly bad in their effect upon domestic economy. The American companies give up foreign markets in order to keep foreign goods away from American consumers. The purpose is to maintain high prices, deprive the American consumer of purchasing power. It may be to the selfish interest of a particular company having for the moment a dominating position in our economy to keep out outside competition and to restrict its own markets. But if the housewives of this country have to pay more for particular products because of these restrictive agreements, obviously the housewives have less money to spend for other products. And we cannot expand our own foreign markets if we close our market to goods from abroad. Clearly the effect of such agreements is to maintain the status quo and to prevent the expansion of our economy.

If American companies are going to accept willingly restrictions on their export trade so that they can maintain high prices in the domestic market we will have a restrictionist economy and we will not achieve full

So cartels have a vital effect on almost all American business. They bring about a restricted market in which the Purchasing Agent must buy with less volume, fewer choices and higher prices. Cartel policies in the long run will obviously mean fewer buying transactions hence less need for the services of Purchasing Agents.

Transportation Is a Factor

New forms of transportation have been created and have made great progress during the war. They should enter into the calculations of Purchasing Agents. Some of the great industries of the country may not look with much favor on some of these newcomers because they may upset some of the existing price patterns. It would be hard on the basing point system in steel or cement, for example, if barge and coastal shipping took much business away from the railroads in the movement of these products, because the price formula of base price plus all rail freight might be upset.

Some steel companies are also mortally airaid of truck shipments for the same reason. Perhaps a little pressure by the Purchasing Agents upon the methods of delivery of these expensive freight products would be worthwhile. This would involve insistence upon delivered prices reflecting the low, actual freight instead of the all-rail charge used in the formula.

Air freight may be still more disturbing to monopoly price patterns. This disturbance may extend all the way from tropical fruit to fractional horsepower motors. Wouldn't it be shocking if some of the great airplane plants on the Pacific Coast, for example, should begin making electrical products and distributing them around the country by airplanes? A little encouragement from Purchasing Agents might bring this about.

No Job for Timid Souls

Any developments in technology which promote faster and cheaper transportation are of course of vital interest to all business. We all know that there have been some remarkable developments. The danger is that they will be sidetracked under pressure from present agencies of transportation concerned with maintaining existing capital values. We cannot foresee all the possible future transportation developments. Some that are proposed may or may not be economical. But we should be deeply concerned that new modes shall at least have a chance to prove their worth, and that they should

Continued on page 296

"PUBLIC RELATIONS"

FIRST impressions are lasting impressions. For this reason the Purchasing Agent, first point of contact between his company and the visiting sales representative, has a special responsibility and opportunity for public relations service to his organization; and the purchasing department reception room far more than a strictly utilitarian or functional role. Courtesy and cordiality, in addition to promptness and efficiency, set the key for a satisfactory, cooperative interview and establish the character of the company in a favorable light with those upon whom the buyer must depend for his supplies. On the other hand, the salesman who has to rap on a tiny "Information" window to attract attention, and then literally battle his way into the buyer's sanctum, is likely to retain that unfortunate memory even if he emerges with the order in hand.

A great deal depends, of course, upon'the physical facilities set up for this purpose, and upon the personality and intelligence of the receptionist. And any layout, however attractive and comfortable, and any system, however efficient, must be backed up by the sincerity and courtesy of the Purchasing Agent himself in handling the interview. But a number of purchasing departments have found a simple and effective means of expressing the company's welcome in the form of a card or folder to be placed in the hands of the visitor at the very outset, as he registers for his call.

Two effective examples of this method are illustrated herewith. The first of these is used at the office of The American Welding & Manufacturing Company, Warren, Ohio. It is uniquely personalized by having the receptionist write in the visitor's name as she enters the call. Thus he is handed a folder headed with the greeting: "Welcome to American Welding, Mr. Jones." The brief message on the cover page goes on to sav:

"Whether this is your first visit or your fiftieth, we want you to know that we are glad to see you.

"If the person upon whom you are

calling does not receive you within 10 minutes of the announcement of your arrival, or advise you that there will be a delay, do not hesitate to ask our operator to announce you again.

'Meanwhile the following pages of this folder will supply you with information that may be interesting or helpful. Please make yourself comfortable."

The inside pages of the folder contain four brief sections of pertinent and helpful information. First, a reminder of five practical services provided by the company "For your convenience"

1. A telephone is provided at the top of the stairs just across the inside hallway. Please don't hesitate to use it to arrange your further calls here in Warren while you are waiting.

2. The men's restroom is also in this hallway. Turn right and take the first door to the left.

3. Timetables and scratch pads are available-ask the receptionist.

You are welcome to use them. 4. The telephone number of the local cab company is 4141. Our operator will gladly call it for you.

5. A map of Warren with the location of other leading industries clearly marked will be found on the back cover of this folder for your convenience.

Second is a brief message of welcome and statement of policy, signed by W. J. Sampson, Jr., President of

the company:

"As our guest we want you to have every courtesy and attention while you are visiting us here at American Wolding. We realize that the information you bring to us may be of the greatest value in helping us to produce better, faster, or at lower cost. The intelligent efforts of salesmen and servicemen have benefited our business and every business. Any suggestions for the improvement of the reception afforded you, therefore, will be most gratefully received; and I should be glad to have you send your comments to me personally."

Third is "A word about our Company", summarizing the products, facilities, and experience of the organization. This is helpful as a guide to the company's requirements. At the same time, it does not overlook the opportunity of including a sales promotional suggestion to the salesminded reader: "We shall welcome knowledge of where we may be of



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Begins In The Reception Room



service to manufacturers of your acquaintance."

Fourth is a directory of sixteen "Persons you may wish to see". The proper title, the correct spelling of names, and the correct initials are important to the visitor who is anxious to make a good impression and to get to the right party. It also gives a good quick picture of the size and scope of the organization. Included in this list are the President, Secretary and Treasurer, Assistant Secretary and Treasurer, Manager of Sales, Assistant to Manager of Sales, Manager of Product Development, Customer Service, Chief Process Engineer, Purchasing Agent, Comptroller of Operations, Chief Engineer, Plant Superintendent, Assistant Plant Superintendent, Director of Personnel and Safety, Director of Contracts, and Chief Inspector.

The back cover page is devoted to a skeleton map of the city, clearly showing the location of railroad and If you have developed any new and effective methods of improving purchasing department service, the editors of PURCHASING would appreciate hearing about them and receiving specimen copies of the appropriate forms, to pass this information along for the benefit of other readers.

bus stations, the principal hotels, and a score of the city's leading industrial plants likely to be on the salesman's itinerary—and the most direct way of getting from one to another. The convenience and time-saving value of this information in helping to schedule calls is obvious. It also indicates a cooperative community spirit. The back page alone is assurance that the folder will be slipped into the salesman's pocket for future reference, and every time he consults it "public relations" goes to work for American Welding.

The second illustration shows that the welcome message is not necessarily an elaborate document in order to put across the spirit of helpful cooperation. At the Acushnet Process Company, New Bedford, Mass., the caller receives a neatly printed card, headed "Welcome to Acushnet". The story is condensed into five brief paragraphs:

"We will be pleased to see you as soon as possible.

"If you are new in this territory, and want help in planning the rest of your day here, say so. We'll spot your other calls on the map, make transportation suggestions, and help you arrange your itinerary.

"Use a telephone here, if you

"If you need a desk we will gladly make arrangements for you.

"If there's any other way we can help make your day on the road more pleasant and productive, let us know."

Continued on page 294

A Short Cut For Stock Records

By N. L. ESTHUS

Purchasing Agent Morton Salt Company Chicago

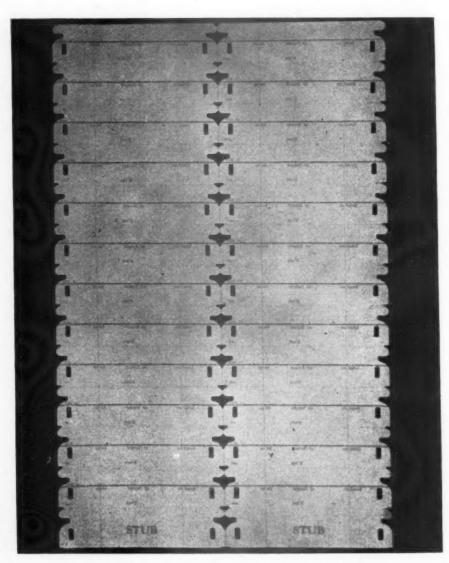
METHOD of entry now in use by our company in the keeping of stock records may be of interest and possible service to purchasing or stores control departments carrying similar records. We keep a stock record of several thousand items of packaging materials which constitute an important part of this company's purchases. From this record we control inventories and determine the purchases to be made for a number of producing plants and secondary warehouses located from New York to California. It had been the standard practice for these branches to make itemized inventory reports on printed forms provided for the purpose, covering the receipt and consumption of each item carried in stock, and the balance remaining on hand, in the conventional order as follows:

- 1. Balance carried forward from last report
 - 2. Receipts during period
- 3. Total of "carried forward" and "received"
 - 4. Consumption
- 5. Balance on hand at end of period

Such reports were at one time made as frequently as four times per month at each plant and forwarded to the main office for transcription to its records. As the purchasing department gradually assumed more and more centralized control over stock, and with the adoption of definite methods of spotting low stocks, the frequency of reports was reduced to two per month, and finally to one full report per month plus an interim mid-month report simply showing the stock balance on hand.

It is the full monthly report which is described herewith in detail, in the hope that it may be of value to purchasing or other departments with a similar problem. This method is essentially one which does away with the work of transcribing branch reports to the master card record in the home office, and substitutes a

This unique system provides a complete visible record for control of inventory and purchases based on reports from the individual branch plants and warehouses. Transcription errors are eliminated by direct use of the typewritten originals



Reports from the branches are typed by individual items on perforated die-cut sheets, comprising 24 segments. This unique form was developed by Morton Salt Company in cooperation with Remington-Rand, Inc.

type of report which may be transferred bodily to the master record without transcription. In other words, the report sent in by the plant is made on a form which can be taken apart and inserted directly into the master card in purchasing departments. Its primary advantages

are:

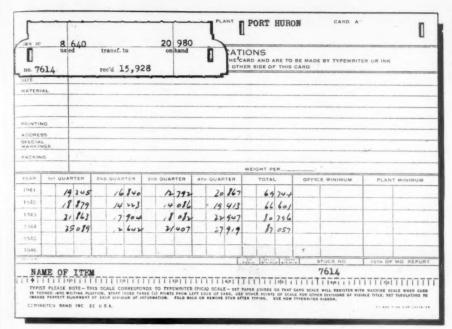
1. A material reduction in time and labor required for entry of the report. Such reduction may easily be 60% to 75%.

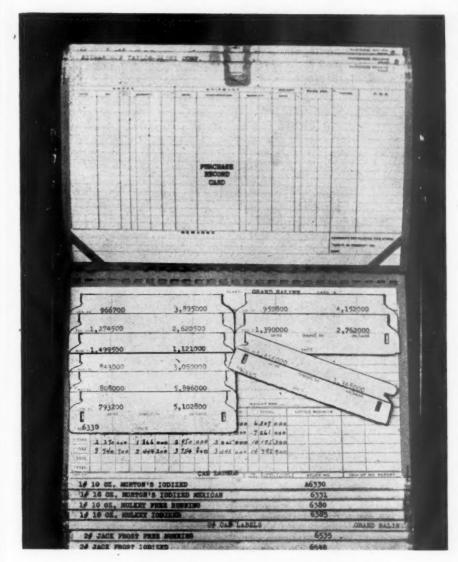
2. As a consequence of getting these reports on record so much more quickly, the person who surno. 761

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1944

1945





Section of visible card record tray, showing eight months' reports inserted and the ninth at the point of insertion

The inventory record card also serves as a specifications record and history of past consumption by quarters. Report segments are "chained" to this card as indicated at upper left. Any changes in specifications are entered on the back of the card, showing nature of and reason for the change, effective date, and authority.

*

veys these stocks and determines the needs of the plant is enabled to requisition these requirements several days sooner each month than was possible under the old system.

Several secondary advantages accrue to our own particular situation, but the two just mentioned would be sufficient in themselves to justify its adoption. The saving of a few days time in placing purchases sometimes becomes a valuable asset when a stock has become depleted due to extraordinary requirements.

As may be seen from Figure 1, the branch inventory report is made on a rather unusual type of form. This sheet is die-cut and perforated into 24 sections, each segment (Figure 2) being a complete report on one item, containing the following information:

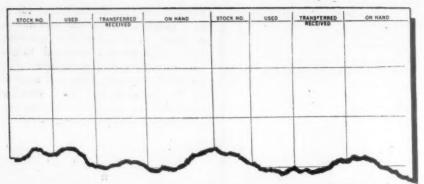
- A. (Above the mid-section line)
 Consumption for the month
 ("used")
 Transfers to other branches
 Balance on hand
- B. (Below the mid-section line)
 Stock number
 Receipts (for the month)

The forms are made out by typewriter at the branch, and are sent to the home office while still in the sheet form. Here they are easily taken apart, being careful to keep the segments in the numerical order in which they were made out.

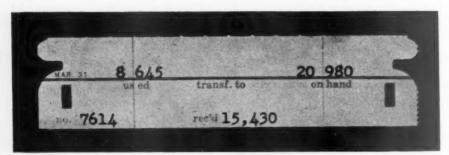
Figure 3 shows the card on which the segments were inserted. Note the slots punched out to receive the first month's report. Subsequent months' reports are chained onto each other consecutively. Figure 4 shows eight months' reports already inserted and the ninth at the point of insertion. It will be noted that in March and September segments have been printed with an extra heavy line, forming a division of the year by quarters.

We have referred in the description of the individual segments (Fig-

G



Duplicate record form, prepared as carbon copy of Figure 1. This sheet is 8 x 13 inches and carries 24 complete entries. It goes directly to the accounting department.



The individual segment, detached for insertion on the master card, measures 4 x 1 inches. The upper line of figures, showing use and balance on hand, remains visible throughout the life of the form.

ure 2) to a "mid-section line". Note that as the successive segments are chained to each other, each one covers up the lower half of the previous month's segment, leaving only the upper half visible. Therefore, we have placed in the upper half that information which is required to be visible at all times, and have left to the lower half that part of the information which is not generally referred to except at the time of entry -in our case, the stock number and the receipt for material taken in during the month. These figures are not entirely lost for future reference, and may easily be seen by slightly lifting the tabs of the succeeding months.

Referring again to Figure 3, it will be noticed that the card on which the segments are inserted serves two additional purposes, viz: (1) As a past history of consumption. The handwritten figures appearing at the bottom of the card below the monthly reports are quarterly and yearly totals of consumption, compiled from the monthly reports above. (2) As a specifications record. This is the upper portion of the card. The fact that the segments after insertion cover up the specification record presents no difficulty, as the interlocking segments are easily lifted like a page, when reference to the specifications is required.

Referring again to Figure 4, the card in the upper pocket is the purchase record card covering the same item as the corresponding inventory card in the lower pocket. The purchase record card covers the usual details as to order date, number and quantity, shipping date, quantity shipped. receiving dates. terms, f.o.b. point, etc.

These report forms described herein (Figure 1) are an adaptation of one which has been used as a reference record, address list, etc. Until this time however, it has been available only in the form of single segments. Ours was the first attempt to put these segments together in sheet form, and it involved some initial difficulties on the part of the manufacturer. They must be die-cut and perforated with much precision in order that the "ears" of the individual segments shall not be too large to slip easily into the punch holes. Also, the horizontal perforating must be carefully done in order to avoid any furred edges on the ears, which would slow down insertion. These may seem like minor details, but troublesome segments may slow down insertion to the point where a large part of the advantage of speed is lost.

The method seems best adapted

to a "visible" card system and a stores control method which uses stock numbers for identification, but undoubtedly with some study it could be adapted to other types of records. In our own case, the report comes to us from the plant in duplicate, the copy simply being made on an ordinary sheet (Figure 5) which has been ruled into sections corresponding to the segments of the original copy. This duplicate copy is immediately turned over to the accounting department, where it is used for valuation of inventory. They have a master list of prices compiled by stock numbers, and a clerk simply transcribes these prices to each item and sends them to a comptometer operator to be extend-

We consider the secondary advantages of our system to be the following:

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1. More legible records, due to having the reports made by typewriter, thus giving us a typewritten instead of a handwritten master stock record.

2. All chance of error in transcription from the plant's report to our records is eliminated, since the operation of transcribing is com-

pletely by-passed.

3. The master stock record cards (onto which the segments are chained) are not required to be replaced as often as under the old method. In our case, when the reports were transcribed onto our records by hand, each face of the card provided for only one year and consequently the entire file of stock record cards had to be headed up every second year, on both sides of the card. Under our present system, the card is headed up on only one side, and at the end of the year the twelve monthly segments are bodily removed from the card by simply unhooking the first and sixth months' segments which are chained onto the (Remember, the other segments are chained into each other.) These two half-year sections are then chained together preparatory to filing away in a transfer file. Thus the inventory card is cleared and ready for another year's record to be inserted; and the length of time which the inventory card will last is limited only by the number of years of quarterly and annual consumption which can be conveniently provided for on the card. When we refurnish this file of cards, we provide for two years of back record and four years

The SUPPLY LINE Must Be Maintained

By CARL WUERPEL
Purchasing Agent
Community Public Service Co.
Fort Worth, Texas

"BOMBER Production Curtailed because of Material Short-

"Tanks Three Weeks behind Schedule—No Material Available" "Shipyard Production Lags due

to Power Failures"

Headlines like these have been conspicuous by their absence for many months, since the United States and Canada entered into the present conflict. We do have some few other bottlenecks—in manpower and transportation—but the material shortages which loomed as our No. 1 problem in the early days of this war emergency have been successfully met.

Allocation of critical material is an absolute necessity in time of war, and to each Purchasing Agent comes the responsibility of seeing that the necessary material is on hand to meet the production schedules so vital to the war effort in this arsenal of democracy and to maintain es-

sential public services.

During peace time, when material was plentiful and there were no serious purchasing difficulties to speak of, delivery was more or less taken for granted by the management, engineering and technical departments. This was the service expected and received from the purchasing department.

Regardless of present material shortages and manpower deficiencies, our effort to see that the material reaches its destination within the allotted time is an obligation

that we must all attempt to maintain at the pre-war level, or better.

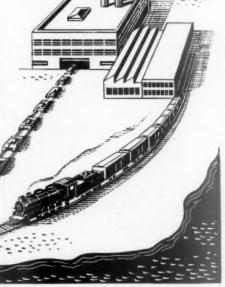
In order to secure deliveries within the required period, a feeling of mutual confidence and honesty must exist between the purchasing department and the seller. After the need for the delivery is proved to the seller, and if the delivery date requested and promised is reasonable, Purchasing Agents can in most cases rely on the promises made. On the other hand, high pressure methods used in an effort to slip one order in ahead of another usually result in further delays.

Acknowledgments of purchase orders should be examined carefully in order that undue delays may be averted. The purchase of a single item may often involve material manufactured by a dozen or more companies, thereby involving a delay in prompt shipment due to the many sources of supply for the finished product. Often a letter written to the vendor who has promised an unsatisfactory shipping schedule, explaining the need for the material and for the date requested, will result in an improvement of the original promise.

The Purchasing Agent's part in maintaining continuity of service and supply, in spite of purchasing difficulties, is one that all members of the profession should be proud of. By the same token, they should feel a deep sense of responsibility in upholding that record.



active member of the Fort Worth Purchasing Agents Association and of the Public Utility Buyers Group, is currently serving as Vice President of the National Association of Purchasing Agents for District No. 2, representing the Associations at Dallas, Fort Worth, Houston, Oklahoma City, Tulsa, and the Texas Panhandle.



Louisiana Buyers Aid in State Market Study

New Orleans Association members list products bought from outside sources and point the logical directions for industrial expansion and development

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S OUND production and marketing plans are based on a study
of actual and potential markets, and
the approaching period of reconversion and readjustment makes the
present a particularly appropriate
time for such research. This has
been recognized by the Committee
for Economic Development on a national scale and by its various State
organizations in regard to local situations. The CED project is noteworthy in many respects. Of particular interest has been the policy of

working with Purchasing Agent groups, predicated on the fact that industrial buying executives are not only the representatives of demand in their respective territories, but have the facts of experience that provide the most accurate available guide to markets.

One such regional study, made by the Birmingham Association, was recently reported in these pages. There is now available a second comprehensive study, conducted by the New Orleans Association under the direction of S. L. Mayo, Chairman of the Association's Educational Committee, and doing a comparable job for the State of Louisiana.

The basic data requested by questionnaire from Association members was a report of major products or product classes that are currently purchased from out-of-state sources, supported where possible by the statistical record of quantity and dollar valuation for a normal year's use. It is suggested that 1940 consumption be used as a base. The

There's A Market For These

Advertising Material
Air Brake Material
Alemite Equipment
Alloys
Assorted
Steel
Brass & Copper
Anchors, Lead & Steel
Anti-Freeze
Asbestos Fibre
Asphalt

Bags Cotton Paper Sugar

Batteries, Storage & Truck Bearings Belting, Leather & Rubber Bentonite Beverage Bottling Equipment Blades, Hacksaw Blankets, Felt Blocks, Wire & Manila Bottles Brushes, Paint Bulbs

Burlap Cabinets, Filing Caps, Beverage Bottling Calendars Castings Aluminum Cast Iron Castings & Flanges Gray Iron Non-Ferrous Zinc Cement Centrifugals & Equipment Chain & Sprockets Chaplets & Chill Coils Chemicals Calcium Silicon

Miscellaneous Chemicals

Caustic Soda

Muriatic Acid

Pigments

Soda Ash
Sodium Aluminate
Silicate of Soda
Tri-Sodium Phosphate
Water Treating
Clay
Cleaners, Steam
Coal
Coal Forks & Shavels
Coin Electric Machines & Parts
Coke
Compressors, Air
Conduit
Container Accessories
Crucibles & Blocks

Dishes, Glassware, Cooking Utensils Drills & Reamers Drum Closures Dry Goods Dry Ice

Electrical Equipment
Heating Devices
Refrigerators & Parts
Cleaners & Parts
Washing Machines
Electrical Supplies
Lamp Cord
Lamps, Floor & Table
Miscellaneous
Electrodes & Nipples
Electrolytic Nickel
Envelopes

Fabrics
Blue Denim
Convict Stripe
Cotton Goods
Osnaburg
Sheeting
Toweling
Fencing, Wire
Fertilizer
Filter Aid
Filter Cloth, Tarpaulin
Fittings, Pipe
Flour
Folders
Forgings

All types Aluminum Foundry Products Freight Levelators

Gas Appliances & Equipment
Commercial & Industrial
Gas Heaters & Parts
Ranges, Cookers & Parts
Water Heaters & Parts
Gilsonite
Groceries

Hats & Caps
Hardware
Miscellaneous
Hand Guns & Fittings
Handles, Axes, Mauls, Shovels, Picks
Steel Fasteners & Bolts
Screws, Bolts, Nuts
Hose, Fire & Water

Ice Coolers & Parts
Ink, Printing
Insulators
Insulating Oil
Irons & Parts
Ironing Machines & Parts

Laboratory Supplies & Equipment Ladders Lead & Lead Products Leather Products Cups, Washers, Side Cuts, Lace Wallets Lighting Equipment, Street Line Protective Equipment Lithopone Lubricants Lumber Crossarms Miscellaneous Plywood Poles, Treated Poles, Untreated

Machinery
Miscellaneous
Woodworking
Magnetos & Parts
Malt, Brewers

MA

report has been kept on a strictly factual basis of actual purchases. It is recognized that these reports from a single city are not all-inclusive, and represent indicators rather than complete totals. They are, however, both factual and representative and can be projected and interpreted in the light of other data to be assembled. That part of the research job is outside the scope of the Purchasing Agents' report.

It is also emphasized that this is in no sense a "buy-at-home" movement. What it does accomplish is to show certain fields in which a local market does exist, but without adequate local sources. For some of these fields it is obvious that local manufacture may not be the practical solution, due to absence of raw material resources or other good reasons. But even in these cases there may be an opportunity for im-

proving service by the strategic location of assembly and distributing stations. If quantities required are small, that information in itself is a valuable contribution to marketing knowledge in that it may prevent ill-advised enterprises from coming into existence to serve a non-existent market.

Purchasing Agents have no interest in encouraging the establishment of economically unsound supplier industries, whether in their own territory or elsewhere, for such sources are neither reliable nor permanent. They are definitely interested in having supplies readily available and close at hand if markets and manufacturing opportunities would justify such a development. In view of the probability of wide-spread industrial development in the post-war period and the conversion of wartime facilities to the production of peace-time

products, their definition of the markets which they represent may prove an invaluable guide in directing such enterprises into the channels of greatest use and most probable success.

The survey did not attempt to set up certain classifications of products and materials for special study, but asked each member Purchasing Agent to list the items which seemed worthy of notice in his particular operation and schedule of requirements. The replies naturally covered a wide range of products, some in small quantity and others in very substantial volume. The totals are rather impressive. The cross-section of demand represents a nine million dollar market for a diversified list of materials for which local supply sources are not available or are inadequate. Five million dollars of

Continued on page 316

Goods In New Orleans

Marine Supplies
Mechanical Rubber Goods
Metals, Non-Ferrous
Meters
Mica
Mill Supplies
Motors & Repair Parts
Mules
Muslin Headers

Norit, Clarifying Carbon

Oakum
Office Supplies
Office & Store Furniture
Oil
Core
Fish
Fuel
Gasoline & Tractor Fuel
Linseed
Miscellaneous
Orticica
Soy Bean
Tung
Overhead Line Accessories

Oxygen & Acetylene Packing Miscellaneous Rubber Packing House Products Adding Machine Bogus Cartons Cups I.B.M. Mimeograph Safety Toilet Pass Books Pencils **Pigments** Lead Titanium Zinc Oxide

Cast Iron Soil Pipe

Miscellaneous

Steel
Wrought Iron
Valves & Fittings
Pipe Covering & Insulation
Pipe Hangers
Plant Equipment
Plumbing Supplies
Pulpwood
Pumps
Gasoline
Miscellaneous
Turbines
Rags
Railway Cars & Electric C

Rags
Railway Cars & Electric Coaches
Rails & Fastenings
Railway Power Equipment
Railway Ties
Range Boilers
Refractories
Fire Brick
Miscellaneous
Regulators & Governors
Resin
Resins, Synthetic
Rock Wool
Rods, Welding
Rope, Wire
Rosin Sheathing Paper
Sand

Banding Glass Saws, Band & Circular Screening, Galvanized Separators Sheets Seats, Closet Sheet Metal Buckets, Tubs, Cans Shoes Signal Equipment Signs Metal Advertising Lithographed Silicate Silverware Slag, Processed Slate, Granular Soap Socks & Stockings Spark Plugs

Stamps, Decalcomania
Station Mechanical Equipment
Staples
Starches & Gums
Stencils
Syrup, Cane
Sugar Mill Supplies
Screw Machine Products
Steel
Cold Rolled Bar
Iron & Steel Poles
Miscellaneous
Nails & Wire Products
Sheets
Towers & Parts

Talc
Tape
Cloth
Splicing
Tires & Tubes
Tools
Logging Hooks
Machine
Miscellaneous Hand & Precision
Tool Boxes
Towels
Tractors & Implements
Transmission Equipment
Transformers
Trolley & Third Rail Equipment
Trucks, Hand & Warehouse
Twine, Cotton

Underground Line Accessories
Uniforms

Valves

Wagon Materials, Oak
Wax
Wheels, Grinding
Wheels, Axles, Brakes
Wire
Wire & Cable
Steel Strand, Galvanized
Stitching
Wiring Devices
Wrenches

NG



A B-29 Superfortress comes off the final assembly line at the Boeing-Wichita plant, headed for Tokyo. Production schedules depend on materials, and materials depend on orders placed in time to meet the schedule.

CHANGES currently taking place in the supply of aircraft materials and components present a grave threat to maintenance of aircraft production at scheduled levels, unless purchasing procedures of the aircraft industry are altered to meet these changes, it is stated by the Aircraft Scheduling Unit of the Aircraft Resources Central Office at Wright Field.

Expressing grave concern over critical shortages of aircraft materials and components caused by late ordering, officials pointed out that an over-cautious buying attitude on the part of some manufacturers in the industry does not take into account the rapid depletion of usable surplus material currently taking place.

Failure to meet aircraft schedules has rarely been traceable to the lack of aircraft materials or components. Credit for the establishment of this record belongs to contractor personnel, the cooperation and resourcefulness of the suppliers and producers of component parts, and the efforts of the Services.

However, this record is now in danger, it is stated. The Aircraft Scheduling Unit reports an alarming increase in critical shortages of aircraft materials, caused largely by late ordering. In the past, orders placed late have been successfully filled by checking the surplus regis-

Lead time must be extended to insure scheduled delivery on critical items

ter of aircraft materials and components, by "horse trading" between users of the critical materials, by the issuance of a directive or a higher rating, and by substitution. However, under present conditions, these methods of filling late orders are becoming ineffective.

According to Col. E. W. Rawlings, Administrator of the Aircraft Scheduling Unit, the aircraft industry has made a determined and successful effort to use surplus aircraft material in production, while there is still a need for such material. "As a result," Colonel Rawlings says, "The usable surplus material is being rapidly depleted. A great many orders which have been filled in the past within 30 days because the material was available in surplus, will now require from 90 to 120 days to fill, since usable surpluses will no longer exist in the near future. Actual time will vary with the respective material or component, but this is the general picture."

The aircraft industry must take cognizance of this change, and adjust its purchase procedure accordingly, Col. Rawlings states. "Early ordering is the best insurance against critical shortages increasing in the production lines," he says. "In the critical months just ahead, placing with full consideration of the flow time cycle will mean the difference in many cases between prompt deliveries and failure to meet schedules. The Aircraft Scheduling Unit has just issued Directive No. 41.1 on this subject of orders and deliveries, and it is made quite clear that the policy of ordering with proper flow time is entirely consistent with inventory regulations and will be taken into account in settlements for termination inventories.'

In addition to depletion of surpluses, the reduction of inventories by the aircraft industry has greatly reduced the possibility of filling late orders by the "horse trading" procedure. While the advantages of a lower inventory position to both manufacturers and the Services are recognized, the combination of shorter commitments and reduced inventories make late ordering increasingly less dependable.

Colonel Rawlings points out that issuance of directives or higher ratings as a recourse from failure to find critical material in surplus or to 'borrow' such material from another user will but further complicate the problem. "The issuance of directives results in inefficient operation for

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the supplier or component manufacturer, and less overall production. This decreased capacity will accentuate the critical shortage picture. The increased demand for directives will be carefully screened by the Services, and only the most vital and urgent late orders will be filled by this means," he says.

Purchasing Agents accustomed to 30 day delivery of supplies will have to adjust their buying habits and allow from 90 to 120 days for delivery. Many suppliers, especially "B" producers, are reducing their stocks of materials and parts to the level of "orders actually received". When the stocks of materials and parts are so reduced, the flow time will be increased by the additional time taken to procure raw materials.

Five Critical Categories

The continuation of factors resulting in the present supply situation will make late orders increasingly difficult to fill in future months. Colonel Rawlings points out that already certain aircraft materials and components are in an extremely short supply position, and others will undoubtedly be added in the critical months ahead. He specifically outlined the present position in five important categories.

Steel Tubing. The Supply situation in heavy wall tubing and all stainless steel tubing, especially 1/2 inch and smaller, is more critical today than at any time since 1942, with surplus practically non-existent. The minimum flow time on this critical tubing is 120 to 150 days, and the only answer is to place orders early, allowing the mills the necessary time to make delivery. General Steel Commodities - The supply situation on aircraft steel commodities in general is becoming progressively tighter, with little prospect for relief in the near future.

Aluminum Sheet. Extremely heavy order loads have been placed on the aluminum producers for the first quarter. It is apparent that a large percentage of this load cannot be produced during this period. The Aircraft Scheduling Unit and WPB is screening this order load very thoroughly to eliminate or postpone all orders for material required for products that are not of the highest urgency. While the placing of advance orders is necessary to allow efficient planning to handle future loads, only the absolute minimum requirements necessary to maintain production should be placed on the mills. Orders required solely for

the purpose of building up inventories will jeopardize production requirements and therefore cannot be manufactured.

Brass Mill Products and Copper Wire. The sudden expansion of small arms ammunition production has increased the load on brass mills for strip production, and this congestion of alloy melt facilities will increase the lead time necessary in the procurement of all brass mill products. The following minimum lead times should be used in placing orders for the specified products: Copper-Alloy Rod 100-130 days

Brass Mill Copper

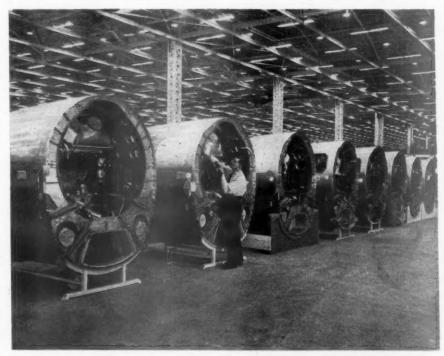
60-90 days Products Alloy Sheet and Strip 100-130 days Other Brass Mill 75-100 days Electrical Cable 100-120 days These orders can usually be cancelled without a cancellation charge, it is pointed out, if the material is not in process of production, and material is seldom processed more than 30 days before shipment is required. This justifies the placement of orders calling for deliveries in accordance with monthly contractural requirements for an entire year, or for the life of a contract, or for lesser periods, possibly not less than 6 months. The placement of long term orders is strongly urged.

Electrical Products. Circuit breakers, fractional horsepower motors, relays and switches are also in a critically short supply position. Surpluses of these products are negligi-

ble, and producers are reducing raw material inventories to the level of orders received. It is expected that the Services and the War Production Board will be reluctant to issue higher ratings and directives, as this would accentuate the already large backlog, and it is clear, therefore, that in many instances, later orders will not be filled. The following minimum lead times should be used by contractors in placing orders: Fractional Horsepower

Motors 180 days 110-140 days Circuit Breakers Relays 120-180 days 80-110 days Switches

Anti-Friction Bearings. The bearing industry reports that requests for shipment of anti-friction bearings for the first quarter of 1945 total only 40% of actual shipments made in the previous three months. These new orders are far below the stated requirements of the military services. Bearing manufacturers are reducing schedules, not replacing employees who leave, and reducing raw material inventories in line with decreased demands. It will not be possible to alleviate a serious bearing shortage by diverting spares shipments from the Services to production needs, as was done eighteen months ago, as spares requirements are still at a minimum. Contractors must base procurement of anti-friction bearings on a five or six months lead time if the production program is to be successfully accomplished.



Here are Superfortresses in process of assembly at the Boeing plant in Renton, Wash. Delay in procurement or delivery of a single small part would hold up progress on the entire plane.

Recent developments in structure and fabricating methods open up a broad range of postwar applications for this cheap and versatile material

Industrial



Exterior and interior walls, roof deck and sub-flooring are of plywood in the office building of Oregon Shipbuilding Corp., designed on the 4-foot module to permit use of 4 x 8 plywood panels

DLY WOOD Its Use and Its Future

By FRED D. MOSHER

BACK in 1905 an enterprising door manufacturer in Oregon experimented with "wood sandwiches" made up from wood strips peeled from fir logs and glued together to make panels for doors. The idea caught on and spread to other woodworking plants in the Pacific Northwest. The furniture manufacturers thought there was something to the new idea and before long "veneers" were being used as parts of furniture -particularly chairs. In the twenty years between 1905 and 1925 the annual output of plywood went from zero to 153 million square feet, World War I having speeded up the growth of the industry. In the 1925-1936 period the plywood manufacturing industry expanded 350%.

When war came to the United States, new and better ways of making plywood were in the process of being perfected, and the sudden need for planes, boats, housing, shipping containers, and everything else required by the Armed Forces, accelerated research and possibilities became realities.

The new synthetic resins have made plywood a leading industrial material. Today, the veneers from which plywood sheets are made are being glued together by amazing materials that make the sheets impervious to water, heat, vermin, rot, and all the other things so important in the construction of equipment that must be used in all kinds of climates and under all kinds of conditions. The developments of the war period will make plywood a most useful material in industrial plants in the post-

Plywood sheets are of standard dimensions up to 4 by 8 feet; the so-called "oversize" panels are produced on special order and may be had in sheets 5 feet wide by 16 feet long. In addition, panels up to 50 feet long have been manufactured and in widths of 8 and 9 feet. Thicknesses go up to 3/4", with the 1/4" size being the most popular in industry. The sheets are made from veneers of thickness varying from 1/100 to 1/8 inch; the veneers are laid alternately lengthwise and crosswise in making up the sheets, with the glue being applied to each veneer. After processing with heat and pressure, the sheets are ready

The unusual strength of plywood comes from the alternating grain of the finished sheets. By special impregnation it is now reported that plywood sheets are being produced having characteristics akin to metals

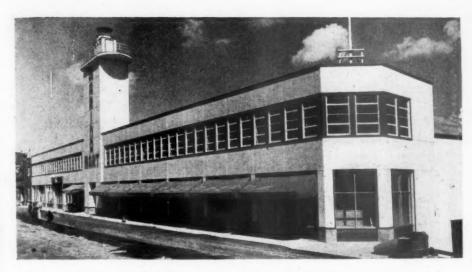
and in some respects being better as to strength and bending qualities. The glues that impart such desirable characteristics as water-resistance, resistance to delamination, and warp-resistance, are the thermoplastic and thermosetting synthetic adhesives.

Methods of Fabrication

In making plywood both a "cold" and a "hot" pressing method are used. The hot pressing method is used in the molding of plywood shapes. The plywood is not plastic but is simply bent in some predetermined shape for which a mold has been provided. The sheets of veneer are laid up on the contour of the mold, the glue is applied as each layer is added, then the shape of desired thickness is subjected to heat and pressure; the resulting shape is permanent and will withstand all the usual rigors of weather and service.

In the future, industry will ask the plywood maker for a special shape for containers, patterns for foundry work, or other irregular shapes, and the product will be produced on a mold. The molded plywood does not have any internal stresses set up in it and consequently it retains the original shape indefinitely.

The term "plastic" plywood is applied to special plywoods which are





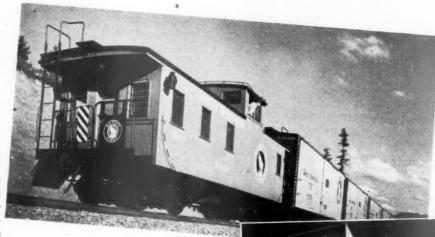


made up in the regular way by gluing veneers, and then treated with various plastics on the surface. Plastic plywood is a more recent development in the industry. The plastic coating makes a hard, smooth surface which adds many desirable qualities to the wood. The plastic renders the wood absolutely waterproof and impervious to shock; for these reasons much of this kind of plywood is going to the invasion beaches, where it is used for packaging vital supplies which are often floated ashore or dropped by parachute. Manufacturers see many possibilities for this type of plywood in the future.

In manufacturing, plywood lends itself to mass-production methods since it can be easily precut to full sections; the conveying problem is simple; the jig and fixture method of assembly can be used. One of the outstanding jobs of plywood assembling is being done in Seattle, Washington where Pacific Huts, Inc., turns out a prefabricated Army hut every ten minutes. The material for the hut is precut in the plant and the parts are then set up in special jigs for assembly. Production costs are low in this plant since only semiskilled labor is required for the job.

Concrete Forms

One of the many industrial uses for plywood is the making of concrete forms. The wood is coming into wide use for this purpose and many buildings such as schools, hotels, and industrial buildings have had their exteriors poured in plywood forms. The plywood gives the surface a continuous surface free from flaws and attractive in appearance.



The Great Northern Railroad is building 1000 boxcars using Douglas fir plywood on a steel frame

Arrowhead Springs Hotel, a good example of smooth concrete walls poured in re-usable plywood forms

Contractors have found that plywood used for concrete forms may be used over and over a number of times. The plywood is structurally strong, and it will not become soaked from the mortar. When the bridges were built over the bay at San Francisco and across the Golden Gate, plywood forms were used in connection with laying the roadways. After each section of road had

set, the forms were taken up and used for a new section.

Plywood for concrete forms is of a special type. The stock widths are from 12" to 48", in even 2" breaks. Widths of 4 feet to 8 feet are in one foot breaks. The thicknesses are ½", 9/16", 5%", 11/16", and ¾", with special ¼" form lining available for curved surfaces.

It is recommended where plywood

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forms are used to any extent that a system of shop prefabrication be used. This permits the use of jigs and fixtures for fast assembly and workmen become highly proficient

on the repetitive work.

For maintenance work plywood will find its way into many factories in the future. Remodeling, partitioning, and layout changes may be done quickly and efficiently through the use of plywood sheets. For the interiors of offices and other rooms the panelling may be stained to any desired pattern. The use of plywood walls permits easy cleaning. The acoustic properties are excellent. Various tests have been run and the wood has been found to be highly noise-resistant and high in sound absorbing capacity.

Varied Applications

A recent application of plywood was in the construction of refrigerator cars for a western railroad. Both interiors and exteriors of the cars were made from Douglas Fir Plywood and the results to date have been highly satisfactory. Because of the good results obtained with railroad cars it is expected that wide use will be made of plywood in the construction of truck bodies. Another use for the wood will be the lining of railway boxcars for special shipments requiring such protection.

Some of the newer plywoods, developed since the war, are ideal for such uses as carrying low pressure air; conduit for electrical cables; temporary transportation of fluids such as oil or water; ducts for dust removal; overhead ductwork for air

conditioning systems.

A particular application for plywood ducts is in the addition of air conditioning systems to existing buildings. The ducts are simple to apply and require very little work to install them. Formerly heavy



Plywood is being used for community buildings, cafeterias, theaters, libraries and schools

metal ducts, requiring special supports, were used for this kind of work. Plywood sectional ducts may be used with lower cost and fewer support problems. The ducts may be hung from ceilings or supported from the floor.

Since plywood may be had in the heat-resisting types it may also be used for distribution of heated air either for space heating or drying in industrial processes. The duct sections may be disassembled with ease and relocated when necessary.

For industrial buildings there are available many designs for which plywood may be used to advantage. During the war considerable experience has been obtained in the art of prefabrication and many industrial building manufacturers have turned out thousands of buildings of all sizes. It is predicted that many utility buildings will be wholly prefabricated in factories and purchased for site erection by the buyer. Many designs have been worked out to

keep waste at a minimum and consequently the buildings are lowpriced. na

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Plywood Containers

Containers made from plywood have been turned out by the millions for war purposes. Before the war the production of all types of containers from plywood was a sizeable industry. In addition to the manufacturers now making plywood containers a number of war-produced builders are considering entering the field after the war. Considerable attention is being given to the design of containers suitable for airplane shipments.

Industrial plants are using more and more of this type of container, and millions of household appliances will be shipped in such packages in the future. Containers are precut and shipped to the user knocked down. Both the container manufacturer and the user work out designs

Continued on page 320



Plywood structures help to solve the housing problem in defense areas and near military stations. This one is at Fort Lewis, Washington

WAR GOODS PRICING in 1945

How the War Department's company pricing program affects prime and subcontractors

Industrial efficiency is needed for war production and for postwar competition

By COLONEL FRED C. FOY

Director, Purchases Division Army Service Forces Washington

THE War Department's so-called Company Pricing Program is a natural outgrowth of the problems we have encountered together with manufacturers as we have worked with them to set fair and reasonable prices on individual contracts. It is in essence a shortcut to easier pricing of individual contracts, and a route to higher net earnings after renegotiation for many companies.

In the middle of December, because of the Company Pricing Program's interest to the business men with whom our procurement people were dealing, we issued a news release telling something about it. Before we knew what had happened we were in the midst of considerable journalistic comment.

The New York *Times* reported: "much criticism has been levelled at renegotiation, but more probably will be hurled at repricing."

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The Research Institute of America, on the other hand, didn't take our program seriously at all. It stated: "If the renegotiation law is enacted you can expect some of the steam to go out of the drive for repricing."

Babson's Service reported: "Pricing problems are one of the most baffling phases of the war for most prime and subcontractors... Now an entirely new element is about to be presented. The situation will become even more baffling."

The New York Journal of Commerce proclaimed in headlines: "Program Will Relieve Many War Contractors from Renogotiation."

Many of these comments were based on somewhat incomplete knowledge of the Company Pricing Program. Some comments have been misleading and have tended to stir up controversy, but perhaps the interest they have aroused is a good thing.

Let me remind you that almost every officer and civilian engaged in War Department procurement is a business man. Most of us have been raised in the tough competitive tradition which probably is responsible as much as any one thing for making America the most powerful industrial nation of the world.

We must recognize, however, that competition and competitive prices are the result of free play of the economic law of supply and demand. We have only to look about us at priorities, allocations and rationing, to understand very quickly that demand these days far exceeds supply, and that free play of economic law is under quite a set of wraps.

In the War Department alone we have placed orders for over 108 billion dollars worth of goods between January 1942 and November 1944. That manufacturers were able to take this much business in the short space of 35 months is a great tribute to American business. But as this volume has come in the door, it is clear that in most cases competition has gone out the window. More often than not, our problem has been to seek out suppliers who would undertake to make some item they had never made before, and for which neither they nor we knew at the time what a fair and reasonable price should be. And the manufacturers have had almost exactly the same problem with subcontracts.

Fair Prices Essential

Yet from the start it has been a matter of agreement between the government and far-sighted business men that war goods should be sold at fair and reasonable prices; that no excessive profits and war profiteers should develop from this war.

One way of accomplishing this mutual objective was to find a synthetic substitute for the normal peacetime pressure of competition. Under Glen Lloyd's direction, the War Department worked out with



COL. F. C. FOY

business men a method of analyzing the prices quoted on individual contracts. It is based on a sound, simple business principle, one which most manufacturers have used for their own information for years.

For example, two companies call on the Telephone Company to sell booths. They get a sample and blueprints. Engineers go over prints and tear down the samples. Material is tested and priced, operations planned, costs estimated, engineering charges added. Profit expected is included. The price is quoted.

All the War Department does is take this another step. It looks at these criteria along with the seller. It compares them with any similar information, available either through the seller's previous experience or that of other suppliers of the same or like items. The result of this kind of negotiation is a price which both parties believe at the time is close to a set of estimated costs, which in turn are based on efficient operation. In many cases, we be-

lieve it is a price which approximates what the seller would place on his product in a free competitive market.

But one of our journalistic critics, the *Journal of Accountancy*, questions the fairness of negotiations in which, as it says, "the buyer has the power ultimately to impose his will on the seller." This seems to be a case of our old friend, Title VIII of the Revenue Act of 1943, rearing its ugly head.

Price Fixing Powers

It is perfectly true that Title VIII gives the War Department power to fix prices on war contracts or subcontracts, but-and this is very important-only in those cases where the seller "refuses to agree to a price which the Secretary considers fair and reasonable." In short, the War Department has the burden of satisfying itself that the price offered by the contractor is not "fair and reasonable" before it has the power to impose its will on the seller. And of course the seller is given final recourse to the courts. The important thing is not the power inherent in a law like that, but whether it has been necessary to use that power. Title VIII has been on the books since February 1944, and as far as I know it has been used just once by either the Army or the Navy. In that one case, it was as a last resort, and only after lengthy negotiations had reached an impasse. Our individual contract pricing has been based on voluntary negotiations, and our present Company Pricing Program is also based on voluntary negotia-

This type of price analysis and voluntary negotiation got off to a good start in the placement of individual contracts during 1943. With the advent of 1944, we were able to look over summaries of the results of statutory renegotiation and see what type of profits were developing under the pricing program. We found that in many respects it was working well from an overall profit standpoint.

We did, however, discover two broad categories of business in which we thought the pricing job should be improved. One of these categories was composed of certain subcontractors, selling war goods at such remote levels of subcontracting that War Department buyers had no occasion to talk prices with them. Nor did some of the prime contractors to whom they were selling seem

to be pricing their purchases closely.

The other group was composed of companies whose estimates of price seemed consistently reasonable, including the estimated profit margin, on individual contracts, and yet turned up at the end of the year with excessive profits on their business as a whole. In many cases it was apparent that this was not the result of an attempt to include hidden excessive profits in the original bid, nor of increased efficiency in production. More often than not it

managements helps both of us to get at the cause of the excessive profits.

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b. There is another small group who are prime or subcontractors who find themselves with some special type of problem that needs particular consideration. Most of these are companies who request an overall discussion of pricing policy, usually as an outgrowth of some difficulty in arriving at an individual price.

During 1944, the War Department carried on overall pricing dis-



As volume of materiel has become more important on the war production lines competition has been less of a factor

grew out of increased business volume which caused companies to over-absorb overhead charges on individual contracts; sometimes it grew out of the inclusion in prices of undiscussed cushions for contingencies which never materialized; and sometimes it grew out of similar company policies which ultimately showed up as larger profits at the end of the year.

Company Pricing Program

From this it became clear that some phases of pricing required a consideration of a company's business as a whole, or of its basic policies with respect to fixed overheads, contingencies, research, engineering and similar items.

The answer to this need was what we now call the Company Pricing Program. Mainly, company pricing discussions are carried on with two general classes of companies:

a. Those which, in connection with renegotiation, are shown to be earning excessive profits. It seems reasonable to assume that these companies are not pricing their individual contracts realistically. A discussion around the table with their

cussions with over 300 companies. These talks led us to the solution of many points that were bothering business men as they tried to apply the principles of close pricing to their government contracts.

How It Works

Here is how the Company Pricing Program may affect an individual company:

If your company is assigned to a War Department office for statutory renegotiation, it is automatically assigned to that same office for Company Pricing review. Either at the time of renegotiation, or some other more convenient time, the company pricing coordinator in that office will look at the various types of information available on your company to see if there is any indication that your costs, prices, or profits are out of line. If they are, you will be asked to meet with a Company Pricing team, usually comprised of both renegotiation and procurement personnel. The team may also include representatives of the Navy or other government procurement agency with whom you do business.

The Company Pricing team will

discuss with you your individual contract and item prices, also your projected war business on an overall basis. The team will ask you to suggest what can be done practically to get your operations on a close pricing basis. This discussion may result in a refund of excessive profits accumulated to date in your fiscal year, which will place your company currently on a close-pricing basis and eliminate any excessive profit "cushion" that may have piled up. It may also result in changes in your

it is good business for the government, as well as for the contractor, not to subject the contractor to risks which he can neither predict nor control. At the present time, there are three important elements of cost, the control of which does not rest entirely with the contractor. First, labor rates are now fixed by the War Labor Board. Second, the contractor has less influence on the prices he has to pay; in some cases, such as rubber, the materials are actually sold to the contractor by an



One of the price difficulties has been that the great bulk of war requirements are necessarily built to special design

current prices, regardless of whether you sell directly to the government or to some other contractor.

The Company Pricing discussion may also result in a change of your pricing policies in future quotations on war goods-such as the adjustment of overhead charges downward in future bids as volume increases, in order to prevent overabsorption of burden as you go through the year, with an upward adjustment provision to protect you against loss in the event of an unanticipated volume decrease. I am reluctant to spell out in too much detail the exact direction any individual Company Pricing discussion might take, because we consider each company as an individual case and ask you to tell us how you suggest we can best solve our mutual problem. Whenever an adjustment of price or pricing policy is indicated, an agreement may be drawn up as a separate contract or as a supplement to your present contracts, as part of your renegotiation agreement, or simply as an exchange of letters establishing agreement on pricing policy.

We have taken the position that

agency of the government at prices fixed by this agency. The third very important element of cost which is often beyond the control of the contractor is volume of production. Contracts may be cancelled or permitted to run out without renewals or additional orders, although the contractor's prices and performance may have a considerable effect on the government's decision.

The contractor can be protected against the development of one or more of these contingencies in two ways. He can guess the amount of protection he will need, and include contingency factors in the price when he quotes. This type of industrial crystal gazing is not fair either to the contractor or to the taxpayers; it is almost certain to make war production cost more than it should.

The other, and more sensible, method of protecting the contractor is for the government to assume fully the responsibility for those unusual increases in cost over which the contractor has no control, while contractors should continue as usual to carry the risks of inefficiency.

The War Department is carrying out this policy on its longer term

prime contracts by a method under which prices are or can be reset on a short-term basis. We now have three provisions for this purpose in the Procurement Regulations. One provides for setting future prices at the beginning of several stated periods, each a few months long. A second provides for adjusting the price retroactively at the end of the first period and setting future prices for succeeding periods. Although we have had some success with these provisions, they have not been as popular as we had hoped. Therefore we supplemented them with another provision which is more flexible in operation.

War Department Policies

Briefly, this article makes it possible for the contractor to establish a price in which he makes no allowance for contingencies to protect him against cost increases resulting from some action of the government which materially changes the basis on which he had calculated his price. Unlike the other clauses which require a renegotiation of the price at stated intervals and on the basis of a careful study of all the costs of manufacture, this new article gives both the contractor and the government the right to negotiate a new price under the contract at any time on the basis of a written request for such revision, supported by a statement of the reasons why this is believed necessary. Nor does it call for exhaustive accounting analvsis, but states simply that the new price shall be fixed by negotiation in the same manner and on the same basic principles which governed fixing of the original price. In short, it makes possible an adjustment of price to restore as nearly as possible the intent of both parties which existed when the original price was

It is becoming increasingly clear that close prices on war contracts can be brought about only through good negotiation, when both parties put all of the facts on the table and work on a basis of mutual confidence. We can't ask business to take contingency protection out of its prices unless we are willing to substitute a form of protection against cost factors beyond the contractor's control. The War Department does feel, however, that American business, even in war time, should continue to be subject to normal business risks. We believe it

Continued on page 298



Food Price Increases

Actual purchase record reveals that costs have advanced 48% since September, 1941

DURCHASING Agents who are concerned with a food budget or commissary buying cannot rely on general cost-of-living indices as a measure of their particular market in providing an adequate and balanced diet for their wards in hospitals or institutions, and the actual record of purchases gives little cause for complacency. Of interest in this connection is a study report recently made by Roland M. Brennan, Purchasing Officer for the District of Columbia, to the Board of Commissioners, containing a tabulation of the comparative prices paid in September 1941 and September 1944. The summary shows an average overall increase of 48% in food prices during this period. Even at the beginning of this period there had been two years of rather sharply advancing prices since the outbreak of the war in Europe in September

The general tabulation, in fifteen principal food classifications, is shown herewith in Table I. In Mr. Brennan's report this table is supported by detailed prices on some sixty individual items. This itemized case history reveals some interesting situations that are not reflected in the general summary, and shows the condition to be actually more critical than indicated by the statistical summary.

On clams and oysters, for example, where prices had advanced 159% and 130% respectively, no purchases were made at the excessively high levels, and these figures were therefore not included in the recapitulation. On beef cuts no comparison is possible, for present deliveries are of "C" grade whereas 1941 purchases were of prime beef. On this point the report states:

"No fair comparison can be made as to relative prices of fresh meats in 1944 as compared with 1941. Costs have increased, naturally, but quality of meats now being ordered is inferior to quality received in 1941. Moreover, meat contractors are not obliged to fill orders as called for, but have the right to supply only what is available to them under Government quotas."

There are also some discrepancies: "Why our prices for hard and soft wheat flour should be up 72% in three years, while Procurement Division's contractors supply bread and rolls at prices only 10% higher than in September 1941 is not understandable, unless it is subsidies that keep the prices of bakery

products down."

In the fresh fruit and vegetable classification, containing twenty-four principal items, the price advance ranges from 21% (celery) to 239% (apples), with an average advance of 98%. More than half of these items have advanced substantially more than 100%.

Among the ten principal items of canned fruits, vegetables and juices upon which the index is based, the price advance ranges from 13% (corn) to 165% (apples), with an average advance of 55%. Tomato juice is up 39%, while canned tomatoes are up 128%.

Among the meat products, advances range from 3% (beef brains) to 81% (pork sausage links).

TABLE I RELATIVE FOOD PRICES September 1941 — September 1944

	0/ 0:
	% Price
	Advance
Principal Fresh Fruits and Vegetables	98
Butter, Creamery — 92 score	
Poultry	
Fish, fresh and frozen	
Eggs, shell	
Milk, Grade A	
Cream, 20%	
Flour	
Sugar	70 *
Oleomargarine	
Coffee	
Bread & Rolls	
Principal Canned Fruits, Vegetables and Juices	
Meats and Meat Products	
Lard	
AVERAGE INCREASE	48%

Procurement Division Warehouse Price List, which includes 5% handling charge.

USE of Plastics "KNOW HOW"

By GEORGE E. HENRY

Though molders are the buyer's first line of contact, manufacturers are an invaluable source of information on the efficient use of their products

T has been the purpose of this series of articles to help you get acquainted with plastics by giving you the facts about the many types of plastics and their multifarious uses, the widely differing qualities of the many plastics types that go to make up the thermosetting and thermoplastic groups, the need for giving particular attention to the design of products slated for plastics production as well as basing plastics selection on the use requirements of a product, and the indispensability of consulting with competent molders and the plastics engineers of materials manufacturers as to what plastics should be used for a projected product:

By text and illustration the growing influence of this comparatively small but lusty, infant industry has been delineated, though as an industry it isn't going to revolutionize established customs and practices nor turn the economic world upside down because, metaphorically, it is neither a Hercules nor an Atlas.

From the standpoint of physical volume, plastics production is but an infinitesimal fraction of the tonnage of engineering materials long in use. At present but a small part of this production is being used for molded products or fabricated parts. Where plastics have earned recognition and continued use, these results have been achieved by sheer merit and utility, or eye appeal, or a combination of utility and beauty. Two nice

words that may well apply to their use in conjunction with the age-old engineering materials are complement and implement, for bonding materials have been perfected that effectively bond plastic to metal, wood, rubber, or plastic.

And stemming from these fundamentals we find that plastics are being used in the building of ships' keels and shoe heels, bombers and billiard balls, pulleys and panties, jigs and jewelry, gears and goggles, ropes and radio cabinets. Thousands of products are being molded or fabricated of plastics for the simple reason that plastics have inherent characteristics, differing in the different types, that especially adapt them for very specific end uses. That quality may be lightness, toughness, resistance to the spillage of night life, electrical resistance, resistance to corrosion, or clarity or color.

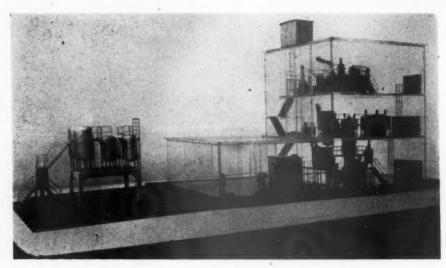


Ranger aircraft motors are wrapped in moisture repellent Plio-film for delivery to the armed forces

In creating new products or components, one cannot just say "let's use plastics." There are too many factors to be studied ere such a decision should be made—factors involving type of plastic and numerous and/ors involving physical, chemical, electrical, dimensional and other qualities of the proposed plastic, and also costs. And it is important to understand that in some instances a desired quality such as high dielectric strength may depreciate other desired qualities, and thus make the use of a plastic impractical.

In other words, certain products are molded of certain plastics because the use of the product calls for high impact strength, or dimensional stability, lightness of weight, special resistance to alkalis and acids, electrical qualities, high compression strength inherent in a given type of plastic, or imparted by certain resins or certain fillers.

In the majority of instances, the end use or eye appeal of a product will determine the type of plastic that may or may not be used. Then there are such things to consider as the design, the size of the product and whether or not these factors permit of the product being molded, possible design changes, costs, and whether or not the plastic wanted



Transparent models of Plexiglas help visualize plant layouts and are useful for study or demonstration

will lend itself to the making of that particular design. Then when these things are settled it is up to the customer to weigh the factor of costs and complete negotiations.

The lists of plastics trade names and products made of plastics that accompanied the previous two articles, very forcefully presented two reasons for getting thoroughly acquainted with plastics. The former gave the trade names of plastics ma-

terials. Many of the names represent identical materials, but in most instances the names are of no help in identifying the product. In other words, if the requisition passing over your desk calls for a certain plastic "or equal" you could well have a problem on your hands if you do not know plastics and dependable suppliers—molders or fabricators.

PLASTICS MOLDING MATERIALS MANUFACTURERS Acrylics

E. I. duPont de Nemours & Co., Wilmington, Del. Rohm & Haas Co., Philadelphia, Pa.

Allymer Monomers

Pittsburgh Plate Glass Co., Columbia Chemicals Div., Pittsburgh, Pa.

Analine-Formaldehyde

Ciba Products Corp., Hoboken, N. J.

Cellulose Acetate

Amer. Molding Powder & Chemical Corp., Bklyn, N.Y. Celanese Plastics Corp., New York, N. Y. Chemaco Corp., Berkeley Heights, N. J. E. I. duPont de Nemours & Co., Inc., Wilmington, Del. Monsanto Chemical Co., Springfield, Mass. Nixon Nitration Works, Nixon, N. J. Tennessee Eastman Corp., Kingsport, Tenn. *H. Muehlstein & Co., New York, N. Y. *Gering Products, Inc., Kenilworth, N. J.

Casein

Hercules Powder Co. (flake) Wilmington, Del. American Plastics Corp., New York, N. Y. *H. Muehlstein & Co., New York, N. Y.

Cast Phenolic Resin

Bakelite Corp., New York, N. Y.
Catalin Corp., New York, N. Y.
Durez Plastics & Chemicals, Inc., N. Tonawanda, N. Y.
Marblette Corp., Long Island City, N. Y.

Cellulose Acetate Butyrate

Hercules Powder Co. (flake) Wilmington, Del. Tennessee Eastman Corp., Kingsport, Tenn. *Gering Products, Inc., Kenilworth, N. J.

Cellulose Nitrate

Hercules Powder Co. (flake) Wilmington, Del. Monsanto Chemical Co. (flake) Springfield, Mass.

Cellulose Nitrate Rods, Sheets, Tubes

Celanese Plastics Corp. (S., T.) New York, N. Y. Monsanto Chemical Co. (R., S., T.) Springfield, Mass. E. I. duPont deNemours (R., S., T.) Wilmington, Del. *Gering Products, Inc., Kenilworth, N. J. Nixon Nitration Works (T., R.) Nixon, N. J.

Ethyl Cellulose

Celanese Plastics Carp., New York, N. Y. Chemaco Corp., Berkeley Heights, N. J. Dow Chemical Co., Midland, Mich. Hercules Powder Co. (flake) Wilmington, Del. Nixon Nitration Works, Nixon, N. J. *H. Muehlstein & Co., New York, N. Y.

Lignin

Masonite Corp., Laurel, Miss. Marathon Corp. (Laminate) Marathon, Wis.

Melamine

American Cyanamid Co., New York, N. Y.

Monsanto Chemical Co. (also resin) Springfield, Mass.

Plaskon Div., Libbey-Owens Ford Glass Co., Toledo,
Ohio

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Plexiglas battery fillers are not affected by contact with hot sulphuric acid, and permit easy visual inspection

The list showing products made of plastics is well worth careful analysis and study for it is indicative of the wide range of general and very specific plastics uses. To grasp its full significance it of course is necessary that one be acquainted with the phenol formaldehyde materials and their uses, the ureaformaldehyde plastics and their uses, and the melamines—all in the thermosetting group; and also the cellu-

losic plastics, the acrylics, the vinyl resins, polystyrene resins, casein materials, and Nylon—all in the thermoplastic group.

To make this general picture of plastics complete, it is fitting that the two lists mentioned be supplemented by a third list—a list showing the different types of plastics molding materials and the makers thereof.

The manufacturers of the raw

materials generally do not engage in custom molding or fabricating their products. If you want a product made of plastics, your first step is to get in touch with dependable molders or fabricators to whom the raw material manufacturers sell their products in the form of powders, granulated, sheet, rod and tube stock. The molders are experienced in commercial problems and commercial production; they have the skill and the mold designers; they are technically trained men, and they recommend and supply the molding materials that should be used.

On the other hand, the manufacturers are the real creators of plastics. These are the men who juggle atoms and molecules and evolve resins and compounds that are the genesis of the wide assortment of materials we know as plastics. *Ipso facto*, they are intimately acquainted with the characteristics and use qualities of their products.

Thus the manufacturers are a dependable source of information about their respective products, and are acquainted with molders and fabricators who likewise may be familiar with them, and can be depended upon to render intelligent

and efficient service.

Catalin Co. (resin) New York, N. Y. Ciba Products Corp., Hoboken, N. J.

Nylon

E. I. duPont de Nemours, Wilmington, Del.

Phenol Formaldehyde

Bakelite Corp., New York, N. Y.
Drackette Co., Cincinnati, Ohio
Durite Plastics, Inc., Philadelphia, Pa.
Durez Plastics & Chemicals, Inc., N. Tonawanda, N. Y.
Heresite & Chemical Co., Manitowoc, Wis.
Makalot Corp., Boston, Mass.
Monsanto Chemical Co., Springfield, Mass.
Reilly Tar & Chemical Co., New York, N. Y.

Phenolic Cast Resins

Bakelite Corp., New York, N. Y.
Catalin Corp., New York, N. Y.
Durite Plastics, Inc., Philadelphia, Pa.
Durez Plastics & Chemicals, Inc., N. Tonawanda, N. Y.
Monsanto Chemical Co., Springfield, Mass.
Reilly Tar & Chemical Co., New York, N. Y.

Phenol-Furfural

Bakelite Corp., New York, N. Y. Durite Plastics, Inc., Philadelphia, Pa. Makalot Corp., Boston, Mass.

Polydichlorostyrene

Monsanto Chemical Co., Springfield, Mass.

Polyethylene

Bakelite Corp., New York, N. Y.

Polystyrene

Bakelite Corp., New York, N. Y.
Catalin Corp., New York, N. Y.
Celanese Plastics Corp., New York, N. Y.
Chemaco Corp., Berkeley Heights, N. J.
Dow Chemical Co., Midland, Mich.
Heresite & Chemical Co., Manitowoc, Mich.
Monsanto Chemical Co., Springfield, Mass.

Urea Formaldehyde

American Cynamid Co., New York, N. Y.
Bakelite Corp., New York, N. Y.
Plaskon Div., Libbey-Owens Ford Glass Co., Toledo,
Ohio

Reilly Tar & Chemical Co., New York, N. Y.

Vinyl Butyral

Bakelite Corp., New York, N. Y.

Vinyl Chloride

Bakelite Corp., New York, N. Y. B. F. Goodrich Co., Akron, Ohio

Vinyl Chloride Acetate

Bakelite Corp., New York, N. Y.

Vinylidene Chloride

Dow Chemical Co., Midland, Mich.

Vinyl

Chemaco Corp., Berkeley Heights, N. J. Monsanto Chemical Co., Springfield, Mass.

Vinyl Chloride Vinylidene

B. F. Goodrich Co., Akron, Ohio

*Reworked materials

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Law of F. O. B. Shipments



The f.o.b. point in a contract does not determine who pays the freight, but does indicate the point at which title to the goods passes from seller to buyer. Here are some of the questions that may arise

By LEO T. PARKER

E VERY Purchasing Agent frequently must determine questions of law involving f.o.b. shipments of merchandise. In many instances a correct solution of the problem has avoided serious litigation, and consequently resulted in a great saving of time and money.

Moreover, where it is impossible to avoid a lawsuit involving an f.o.b. shipment, the litigant who is familiar with the modern law on this subject may without difficulty build a logical foundation upon which to win a favorable verdict.

Who Owns the Goods?

In many sale contract suits, modern courts carefully scrutinize the testimony to determine whether the shipment was made f.o.b. the location of the seller's plant, or f.o.b. the destination. This is so because it is quite impossible for the court to render a satisfactory verdict in numerous suits without first determining the f.o.b. legal aspect of the controversy.

For illustration, if goods are shipped f.o.b. the seller's location the purchaser automatically takes legal title to the merchandise the instant the shipment is delivered to the carrier. Under these circumstances the



buyer assumes full responsibility for loss of or damage to the merchandise during its transportation. See Em-

HERE ARE SOME OF THE QUESTIONS THAT THE COURTS HAVE DECIDED IN RESPECT TO F.O.B. SHIPMENTS

Who is responsible for adequately insuring shipments made f.o.b. point of origin?

What is the legal interpretation of a price that is f.o.b. destination plus delivery charges?

Can the seller retain title of merchandise after making delivery to the carrier?

Who is responsible for sales, use, and transportation taxes under the f.o.b. provision?

What is the significance of the bill of lading in an f.o.b. transaction?

What is the effect of other contract clauses on the validity of f.o.b.

Does the f.o.b. point classify a sale as interstate or intrastate commerce?

pire, 9 So. (2d) 513. Moreover, the seller cannot regain possession of the goods during transit although he receives definite information that the buyer is insolvent. If the goods are shipped from one state into another neither state may compel payment of a sales tax.

On the other hand, if the shipment is f.o.b. the buyer's city, or destination, the reversal of these legal points is true. Consequently when a shipment of merchandise is made f.o.b. the seller's location the buyer assumes full responsibility for all accidents, contingencies, damage, loss, delays, and the like occasioned by the carrier. But we shall review other law interesting to purchasers and which illustrates that, notwithstanding the usual law relating to

f.o.b. shipments, all sellers are obliged to exercise ordinary prudence in protection of the purchasers.

Seller's Responsibility

For illustration, in Semler v. Schmicker, 38 Atl. (2d) 831, reported October, 1944, it was shown that merchandise was shipped f.o.b. New York by a seller in New York. The seller made a declaration of value to the carrier of \$50 although its actual value was \$500. According to the tariff of the carrier the seller could have paid a few cents and listed the true value of the merchandise. The seller did not do so. The goods were lost in transit. The seller sued the purchaser for value of the goods because the shipment was

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f.o.b. New York, the seller's loca-

The higher court held the purchaser not responsible to the seller for payment of the goods, because the seller used poor judgment in failing to declare the actual value of the merchandise. This court stated important law, as follows:

The general rule is that delivery to a carrier is delivery to the buyer. Unless otherwise authorized by the buyer, the seller must make such contract with the carrier in behalf of the buyer as may be reasonable, having regard to the nature of the goods and the other circumstances of the case. If the seller omit so to do, and the goods are lost or dam-



aged in course of transit, the buyer may decline to treat the delivery to the carrier as a delivery to himself, or may hold the seller responsible in

damages.'

Also, see U. Koen & Company v. New Winnfield Company, 125 So. 764, where a consignee ordered a seller to ship goods which were subsequently lost in transit. The purchaser contended that he had no legal title and, therefore, refused to acknowledge liability. Suit was instituted by the seller against the purchaser but it was shown that the latter had not received the bill of Therefore, the court held that by the act of retaining possession of the bill of lading the seller had legal title to the goods which relieved the purchaser from liability for loss of the merchandise.

So, therefore, irrespective of shipping specifications, the seller is legally obligated to use at least ordinary good judgment to protect the

interest of the buver.

A seller defaults and assumes liability if he fails to follow the buyer's shipping instructions regarding the route, the carrier, date of shipment, packing equipment, or other reasonable instructions issued by the buyer. This law is applicable irrespective of the usual law pertaining to shipments ordered by the buyer f.o.b. the seller's location.

For example, in Tex-O-Kan Flour Mills Company v. Nord, 18 So. (2d) 50, reported July, 1944, the higher court held that a seller's liability for damage to merchandise in transit is not dependent solely upon whether the shipment was made f.o.b. the location of the seller's factory.

In this case the contract of sale specified shipment f.o.b. the seller's location. The merchandise was damaged during transit. The higher court refused to hold in favor of the seller, who sued the buyer to recover the contract price, because the seller failed to ship the merchandise on the date stipulated by the buyer. The court held that the seller had breached its contract and, therefore, the usual law that a buyer assumes responsibility for damage to shipments made f.o.b. seller's location is rendered void. This court said:



"It is well settled that a non-compliance on the part of the seller with instructions respecting delivery of the goods sold is a breach of the contract and that the seller cannot maintain an action to recover the purchase price without first showing that he has carried out his obliga-

Obviously, therefore, when the testimony shows that a seller breached any clause or element in a valid sale contract, the purchaser automatically is relieved from all responsibilities including those arising under f.o.b. shipment rule of law.

Sales Tax Law

Ultimately buyers must pay all taxes, directly or indirectly, on merchandise specified in sale contracts. Therefore, avoidance of such taxation is advantageous when enforcement of taxation laws is illegal.

For example, in Standard Oil Company of California v. Johnson, 147 Pac. (2d) 577, reported June, 1944, it was shown that a seller contracted to sell a purchaser sufficient fuel oil required for its operations in the states of Oregon, Nevada, Arizona, Utah and elsewhere. The con-

tract further provided that the seller would deliver the oil to the buyer's plants in the various states, when ordered out by the buyer. An important clause in the contract provided that the price which the buyer would pay for the oil was the price specified f.o.b. the seller's plant plus the current rail freight "between such point of shipment and such point of delivery". In other words, the selling price was based upon the point of shipment but the total price, that the purchaser agreed to pay, was this price plus the freight charges.

The head office of the seller and also the main office of the purchaser both were located in San Francisco, and all transactions and payments

were handled there.

The California Tax Board assessed a retail sales tax against the seller based nuon the above mentioned sales. The seller paid the tax under protest and filed suit against the state to recover these taxes which amounted to the considerable sum of \$120,196.

The California Tax Board contended that the sales were intrastate. or in effect f.o.b. the seller's location.

The seller contended that the complete or total contract price included the freight charges and that this fact



proved that the shipments were made f.o.b. the purchaser's plants located outside California, which was interstate business against which California could not legally collect its sales tax. In fact the seller argued that since the contract or selling price was specified at the seller's California plant plus the freight charges to the purchaser's plants this indicated conclusively that the sales related to interstate business. Obviously, the suit was most important to the buyer because if the higher court upheld the right of the State of California to collect taxes on such sales, these taxes ultimately must be added to the contract price.

It is important to know that the higher court held the taxation illegal and ordered the California Tax

Board to refund to the seller the amount of \$120,196 previously collected from the seller. This court said:

"Whether or not delivery to a carrier constitutes delivery to the buyer depends upon the intention of the parties as ascertained from the contract and the other circumstances of the case, and ordinarily, unless a contrary intent appears, where the seller contracts to deliver goods at a given destination and he delivers them to a carrier consigned to the buyer with freight charges paid by the seller (f.o.b. point of destination), the delivery to the carrier does not constitute delivery to the buyer and title does not pass until the goods have arrived at their destination.'

This court further said:

"In our opinion the terms of the contract and the circumstances under which the oil was shipped clearly disclose an intent that the railroad in its capacity as common carrier receive the oil at the point of shipment as property of the seller, and that delivery to the buyer should not take place until the oil arrives at its destination outside California . . . It is our conclusion, therefore, that the sales of fuel oil involved in this action were not made in California within the meaning of the Retail Sales Tax Act."

Interstate Business

In order that readers may have opportunity to distinguish between interstate and intrastate transactions we shall briefly review Department of Treasury v. Wood Preserving Corp., 313 U.S. 62. In this case the contract provided for delivery of the merchandise "f.o.b. cars on the railroad tracks." In holding that the sales were intrastate the Supreme Court of the United States said that no freight charges were paid for the transportation. On the other hand the transaction would have related to interstate transactions if the seller



had agreed to pay the freight charges.

Also, see McGoldrick v. Berwind-White Coal Mining Company, 309 U.S. 33. There goods were delivered in New York City by the seller, a Pennsylvania corporation. The question involved was whether New York, the state of the buyer, had the power under the federal Constitution to impose a sales tax. The court held in the affirmative.

Obviously, therefore, in view of these various modern and leading higher court decisions it is advisable, before sale contracts are signed, that the buyers and sellers become correctly and dependably informed regarding the "sales" and "use" tax laws of both the state from which shipments are to be made and into which the goods are to be shipped.

Use Tax Law

Modern high courts consistently hold that a "use" tax on merchandise is valid. Merchandise shipped interstate is taxable by a state after it has "come to rest" therein, and of course the "use" tax is valid with respect to all intrastate transactions.

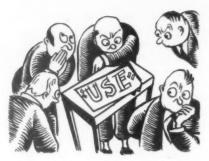
For illustration, in Henneford v. Silas Mason Company, 300 U. S. 577, the Supreme Court of the United States held that the application of a use tax, upon the use of tangible personal property which had been bought at retail in other states and transported into the taxing state, is valid in so far as the Commerce Clause of the United States Constitution is concerned.

Also, see Consolidated Coal Company, 179 S. W. (2d) 17, reported April, 1944. In this case sales of coal were made to residents of Missouri. These sales were made f.o.b. the mines in foreign states. No testimony was given relative to the "intentions" of the parties.

It is important to know that the higher court held that, with respect to the buyers in Missouri, the sales were interstate commerce transactions and that this state's authorities could not collect a sales tax. The court said:

"The sales necessitating transportation of goods from other states to Missouri, are admittedly transactions of interstate commerce."

Also, the higher court refused to agree with the argument that the State of Missouri could collect a "use" tax. In this particular instance Missouri Legislature had neglected to pass a "use" taxation law. The higher court refused to imply that the Legislature intended for the state authorities to collect a "use" tax. This court said:



"The failure of the Legislature to enact a general compensating 'use' tax, . . . lend support to our conclusion that the Legislature intended that the section should exempt all sales transactions of interstate commerce."

Also, see Morrison Company, Inc., v. State, 135 Pac. (2d) 927, where the testimony proved that a corporation sold its products f.o.b. its city. These products were sold and shipped to purchasers located outside the state. In holding the seller liable for payment of the state sales tax, the higher court said:

"Sales to purchasers in another state are not withdrawn from federal control because the goods are delivered f.o.b. at stated points within the state of origin for transportation"

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And again in Standard v. Johnson, 132 Pac. (2d) 910, the court records disclose facts, as follows: A Delaware corporation doing business in California has its head office in San Francisco. The major portion of its products comes from sources within the state of California. This corporation sold its products to a purchaser delivery to be f.o.b. Tracy, California, whence it was transported by the purchaser to various destinations outside the state.

The higher court held that this merchandise was subject to sales tax in California because the transactions between the corporation and the purchasers were purely intrastate. This court said:

"In the case before us we believe that the sale was a transaction begun and completed within the State of California and was purely an intrastate transaction subject to the provisions of the Retail Sales Tax Act. It is to be noted that orders were given in California and that the contract provided for delivery at points in the state."

Intentions Are Important

When conditions are such that the legal title to shipped merchandise may be in either the buyer or seller, the court will refer to logical testi-

PURCHASING Is An All Around Job



By GREY LESLIE

Procurement Division
United Nations Relief and Rehabilitation Administration
Washington

T was by no means accidental that the chairman of the War Production Board who made such an incomparable record was a former Purchasing Agent. American Purchasing Agents may well feel a justifiable pride in their contribution to the miracle of American war production under his able direction.

Spokesman for Industry

In handling thousands of appeals for temporary or permanent relaxation of WPB Limitation and Conservation Orders, it was clearly evidenced that the Purchasing Agent was the best qualified officer to present the facts necessary for processing appeals before the Appeals Board, and to justify claims made in the appeal when hearings were held before that body.

Why?

Because the Purchasing Agent seemed to be the person who knew the technical difficulties of procuring

Because he knew the difficulty and frequent impossibility of getting suitable substitutes for critical items.

Because he knew the limitations of suggested substitutes.

Because he knew the production methods of his company.

Because he knew the impact of other WPB orders on his company's products.

Because he knew the company's inventories and its idle and excess stocks

Because he knew his company's production schedules.

Because he knew the lead-time required to translate materials into finished products.

Because he knew his company's sub-contractors' materials requirements and their interdependence.

In short because he knew his job from raw material to finished production.

As former chief of the Appeals Branch of War Production Board, the writer had the responsibility of examining thousands of appeals from industry for relaxation of WPB Conservation and Limitation Orders, covering a wide range of materials and products. The observations in the following article are based upon first-hand experience with the Purchasing Agent's contribution in the proper and adequate presentation of such appeals, the progressively responsible position of Purchasing Agents in wartime production, and the increasing recognition of that responsibility by alert executives.

Naturally enough there were hundreds of executives who felt that they could rely upon legal counsel for effective presentation of their cases, but most of them soon learned that technical knowledge and data were more essential than forensic eloquence. In hundreds of cases appeals analysts were obliged to discount the high pitched rhetoric of

executives and legal folk and to call upon the Purchasing Agent for the essential data to properly present the case to the Appeals Board in the true interest of essential war production.

While the executive could howl for an uninterrupted flow of new materials, and threaten all sorts of dire results to persons and production if they were not forthcoming with a nice regularity, regardless of other factors, the Purchasing Agent was the fellow who could actually accelerate war production, by utilizing idle and excess inventories made available to his company by WPB. He was the chap who knew production deadlines and, with his Production Manager, could work out material delivery schedules, which would meet them. The Purchasing Agent "spoke the language" of his opposite member on the Appeals Branch staff, because it usually happened that the Appeals Branch Analyst had sometime been a Purchasing Agent himself.

Challenge and Opportunity

In hundreds of cases the Purchasing Agent who appeared as an appellant for a product of questionable military essentiality actually became a salesman for his company in locating essential war business for his available production facilities.

War production has been a tough school for the Purchasing Agent. It has furnished him a post-graduate course in purchasing knowledge and

Continued on page 306

PUT YOUR INVENTORY TO WORK

When stockpiles begin to loaf on the job, beyond the prudent reserve that represents good production insurance, it's time to do something — and fast



Vega Aircraft Corporation's small parts warehouse stresses accessibility as an aid to materials flow

By STUART F. HEINRITZ

THE Purchasing Agent of an eastern manufacturing plant was called into the Executive Vice President's office shortly after the annual inventory period, and was handed a sheaf of work sheets.

"There's obviously an error in these calculations," said the E. V. P. "The accounting department has checked and rechecked, and can't locate the mistake, which must be in the basic data. Since the figures are yours, and you are familiar with the circumstances, perhaps you can put your finger on it and let them know where we have gone haywire."

The Purchasing Agent checked and rechecked, and found the figures to be accurate. The "obvious error" proved to be a fact--rather an astounding fact, to be sure, even to the purchasing man, but nevertheless true; the purchased goods inventory of that plant had turned over twenty-four times in 1944.

What this incident proved was that inventories can actually be put to work, rather than sitting in the stockrooms on a strictly insurance basis, tying up the company's capital and accumulating carrying costs that constitute rather a stiff premium.

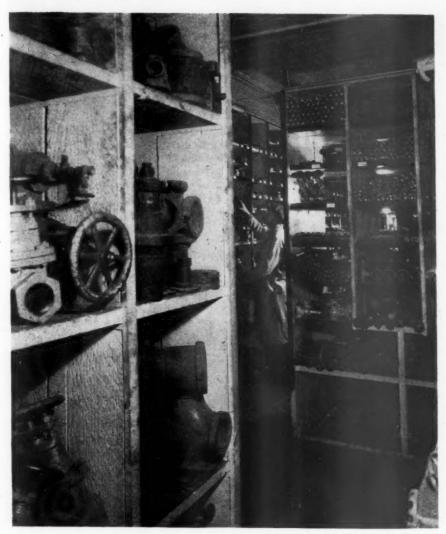
Standards of Turnover

Pre-war, four times a year was about a normal rate of turnover. The company that could turn its inventory six times was doing an exceptional job, ten times a year was phenomenal, and anything over that rate was fantastic. Furthermore, while purchasing and materials men watched the rate of turnover with a good deal of interest and tried to make a good record in this respect, they shied away from it as an automatic measure of procurement efficiency. For it is relatively easy to make a good turnover record at the expense of good purchasing practice. Uneconomical small orders, repeated many times more often than necessary if reasonable quantities were procured, incurring expensive rush transportation and the constant hazard of interrupted production, would show up well on the inventory sheet - but rather poorly on the company balance sheet which is the final standard of accomplishment.

Wartime procurement, and the actual terms of governmental inventory regulations, have changed our standards somewhat. The sixtyday limitation on stocks of many materials automatically put large sectors of industry on a six-time turnover basis, or better, and industry found that this was an entirely practicable basis for the most part. It has been a wholesome experience. It has helped to change materials philosophy from the reservoir system to that of scheduling and flow, which is a far more efficient method in that inventories are

kept at work.

Utility companies, having a special responsibility for uninterrupted service, have had a particularly vivid experience during this period. It has been customary to meet that responsibility with stand-by stocks of equipment and spare parts which were deemed necessary even though it was expected and hoped that the turnover of such items would be relatively slow over a period of years. The Office of War Utilities dealt sternly with this system, setting new and sharply lower stock standards for the industry and putting the excess inventories on a transfer basis. One representative company, for example, was restricted to 70% of what had formerly been considered the absolute minimum for safe operation. They



Stand-by stocks are necessary, but expensive

have had some anxious moments, as when two big transformer stations went out of commission almost simultaneously, but they have been able to manage. Their reaction is reflected in the decision that if, as, and when restrictions are lifted, they will continue to operate on the 70% inventory. It has been an experiment they would not have dared to try on their own initiative, but having proved itself under the spur of war necessity, they propose to benefit by their experience. Perhaps the safety factor has been overdone.

Easier in Peace-time

If all industry could continue to operate indefinitely on wartime inventory standards, the savings would be enormous. Granting that inventories are essential to the smooth operation of a business, and to permit flexible and efficient procurement—so that we must always think in terms of the practicable minimum—excess inventories need-

lessly tie up materials. This has been the dominant consideration in setting wartime policies. Furthermore, it costs money to carry stocks; no one will figure less than 10% to cover carrying charges, in and out handling, supervision, insurance, spoilage, etc., and many will insist that 25% is closer to the actual cost. If inventory is stepped up to six times a year, instead of four, the cost of carrying the materials will be cut by one-third, and it doesn't make any difference whether this is figured as overhead or is added to material costs. To put it another way, both the inventory and the inventory dollar will be doing 50% more work. Even on modest inventories, that is a factor worth serious attention. On the swollen inventories, of war production, and with the possibility of speeding up turnover to substantially greater rates, the mathematical possibilities are startling.

In theory, it should be easier to

accomplish this more readily under normal peace-time operating conditions than in a war economy. Presumably goods will be more readily available, the procurement time shortened, and transportation channels more free, so that scheduling can be done with greater assurance that required delivery dates will be met. There are a few factors to be considered on the other side of the picture. A goodly part of wartime efficiency has been made possible by large volume of operations on uniform models or products, a situation which lends itself more easily to the flow of materials than when manufacturing schedules are uncertain and requirements subject to change. Priority ratings and the support of government procurement agencies have helped.

Unfavorable Factors

The concept of a "practicable" inventory level is also subject to change as industry returns to a competitive basis. To a considerable extent, the low-inventory record has been attained through a compromise with the most efficient purchasing policy; many exceptions have had to be made to bring allotments made by formula in line with reasonable ordering quantities, and there are many more cases where this was not done but where good purchasing judgment would have dictated greater ordering quantities. There will doubtless be plenty of occasions in the days ahead when economic and industrial conditions will suggest the advisability and economy of forward buying or deferred buying rather than strict adherence to quotas and ratios.

Nor are Purchasing Agents likely to forget the necessity for constant and elaborate expediting when inventories are limited by regulation and directive. That, too, has added substantially to the cost of materials. The expense of maintaining a complete and active expediting organization as an adjunct to the buying staff would be sufficient to carry a sizable additional inventory to accomplish the same objective of assured supply, and with fewer headaches. Factors such as these are bound to be weighed very carefully in competitive industry before inventory turnover is accepted as an end in itself. Our customer, the government, has been willing to assume the extra cost for the sake of better utilization limited material supplies in this period of emergency. but our discriminating and dollarconscious postwar customers, Mr. and Mrs. John Q. Public, are not likely to take the same attitude. In that competitive market, the most economical approach to material costs must be determined and adopted.

Where We Stand

A great deal has been accomplished in achieving a more favorable overall industrial inventory picture, but all of these developments do not constitute an unmixed blessing. For a little more than a year, the monthly reports on industry's raw material inventory have shown a downward trend, and superficially supplies seem to stand currently at about six weeks' requirements. The latest business survey report of the National Association of Purchasing Agents, interpreted by Economist Lewis Haney, indicates "that the move to reduce inventories has about run its course" and that stocks of fuels, steel scrap, pig iron, and similar basic items are "pretty low".

Likewise it is not definitely determinable to what extent these statistics represent a factual picture of the situation and to what extent the record has been achieved by the simple means of rushing raw materials into the first stages of fabrication so as to give them the status of "inventory in process". latter procedure has a faint odor of subterfuge, but it is canny accounting policy from several angles; for technically it puts that portion of the inventory into the responsibility of the customer, earns a more favorable basis for compensation in the event the contract is cancelled, and establishes a more impressive record of use requirements that may be an aid to procurement. Unfortunately, at the same time, it diminishes the flexibility and adaptability of the raw materials inventory, which are greatly to be desired in a period of emergency and probably changing requirements, and it entails a very real hazard of wasted material and manpower.

War Production Threatened

There is evidence that governmental procurement agencies and the War Production Board are not entirely happy about the inventory situation. They are concerned lest the trend toward smaller inventories may have gone too far, to the point where 1945 production schedules are endangered by working too closely to short buying cycles. Spe-

cifically they fear that "A manufacturer of component parts, for instance, may readily produce ahead of his contract if he feels reasonably sure that the items he is making will be called for in the near future; but if the future demand for the products becomes too much of a gamble, he is apt to draw on his inventories instead of keeping his production rates up, so that his actual production of parts will not keep pace with the required production of the finished items into which those parts are going." This in turn will lead, it is feared, to a buying cycle so short- i.e., turnover so high-that "it is often impossible for prime contractors to place orders with their subcontractors-and for the subcontractors, in turn, to place orders with their own suppliersearly enough to make certain that materials and components are received on time." Thus the inventory turnover objective boomerangs against the very production schedules it was designed to implement.

WPB concedes that this situation is primarily due to the short buying cycle of the armed forces, and the resultant short buying cycle of prime and subcontractors. corrective measure, contracting officers of all procurement agencies have been directed to place orders promptly covering their firm and anticipated needs as far in advance as possible-"at least through 1945, wherever practicable"-and to require the inclusion of contract clauses extending this policy on a mandatory basis through the stages of prime and subcontractors and suppliers. A few days before this decision and announcement, a strong plea was made by the Air Service Command, through its scheduling unit, exactly to the same effect. The ASU has consistently pressed for such action; WPB presents it as a new policy. The effect in either case will be far reaching. Both of these recent developments are presented in greater detail in special articles elsewhere in this issue. While both deal with ordering practice, they have their roots in the problem of inventories and turnover. They seek to retain the benefits of active materials flow through foresight and scheduling, and to minimize the attendant disadvan-

Elements of Risk

It is frankly stated that the new policy will impose considerable additional risk upon manufacturers, a

risk which must be assumed as inevitable from the nature of the program and the rapid changes in the needs of war. Thus ownership and investment of company funds in inventories, which was originally conceived as a safeguard to the manufacturer and his continuity of operation, are now conceived as a safeguard to the customer and his continuity of supply.

So long as the risk was incurred for the benefit of the owner, and on his own purchasing judgment, it was a legitimate business risk. There have been plenty of mistakes in judgment during the past. In . particular, the staggering inventory losses incurred at the close of the first World War have been deeply impressed upon industrial managers and purchasing executives, either through personal experience or repeated warnings, and there is no inclination to repeat that chapter of history if it can possibly be avoided. Is a comparable situation now in the making?

Good Purchasing Helps

Whether the purchased inventory shall prove to be bane or blessing depends to a considerable degree on purchasing policy. It must be keyed to actual requirements; WPB is talking in terms of "firm needs." It must be safeguarded by the standard acceptable termination settlement provisions, equitably sharing the risk. And in order that costs may be such as to facilitate prompt and fair settlement, procurement contracts should be safeguarded by price decline clauses wherever such provisions are appropriate. may not be thoroughly sound procedure in normal times and under normal competitive conditions of trade, but it is another of the circumstances that must be accepted as inevitable from the nature of war demand and the possibility of rapid changes.

Inventory must be scrupulously administered, too: accurately accounted for both physically and on the record, and sometimes physically segregated as to various stages of ownership responsibility and specific applications for which it is intended.

Above all, inventory must be kept at work. It is the idle stocks that cause waste, shortages, and loss.

Various means have been devised to make it possible for inventories to be kept working in the financial

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PROFIT in PRIORITES

Working under the priorities system has forced many companies to maintain essential records formerly neglected

Uncle Sam has asked no questions that intelligent management should not be able to answer

By J. C. WILLIAMS
Priorities Supervisor
Purchasing Division
The W. L. Maxon Corp.
New York

"T HE fulfillment of the requirements for the defense of the United States has created a shortage in the supply of materials used in the production, etc." And thus began the long, long row that business had to hoe when priorities entered the wide open door of our economical structure.

The start of this momentous undertaking, namely, the enforced control of the total production of these United States was not heralded with a fanfare of trumpets or the beating of drums. It stole silently on the scene and was really not noticed until the first loud squeals were heard from those corporations to be caught in the pincers of this program's enforcement agencies or compliance boards. Then came the rush for experienced priority men, of which there are very few, if any, available. Because of its constantly changing aspects, the priority supervisor, or director, or manager, or whatever you wish to call him, was continually in the position of that well-known billiardist, right behind the cue ball. This position, at times, can become very uncomfortable; I know, because I, too, worked at priorities. There has been so much misunderstanding about priorities that I feel it necessry to devote a few lines briefly outlining the job and its requirements.

All Departments Affected

As the title of this article suggests, priorities work is the summation of the entire activity of the business. Reducing this activity to its essentials in the form of written reports, it summarizes each section of the corporate structure. Priorities concern themselves with the Inventory and Material Control Section, Pur-



chasing, Planning and Scheduling, Methods and Engineering Departments, Personnel, Accounting, and Sales Divisions. All in all, the in-dividual controlling the Priorities Department is in the enviable position of knowing almost as much about the standing of the business as the president of the corporation! In effect, the Priorities Department blankets the entire operation of the facility. The individual controlling priorities must have a general knowledge of each department's organization and function in order to obtain the necessary information for the various forms, and to maintain the necessary control of the factors required by WPB Regulations.

The job our government was attempting to do is familiar to most production men. In effect, it was the scheduling or funneling of scarce materials to the most urgent requirements of a set program. The average individual, John Q. Citizen, had a rather general idea of the program, but the structure of this program is so huge that it became fogged in the illusiveness of its phraseology. It is similar to a brick building, each brick being an "E", "L", or "M" order, and each order, or brick, supporting the other, interlocking. Because of this type of structure it became practically im-

possible to remove these orders separately without endangering the whole structure. Now the idea is to knock the entire three walls down at cessation of war in Europe and just leave standing the front wall and keystone to cover the requirements of our Pacific Operation. This proposition is the constant reminder that pre-war competition will resume immediately on cessation of the European conflict.

Questions and Answers

It has long been my contention that our government has never asked a question, in its WPB Forms, that business should not be able to answer, quickly. A few examples follow. These have been taken from WPB's #CMP7 Form.

Condensing this report, in effect, it asks for a description of the classes of products manufactured, the number of units of these products shipped, and the dollar value of these shipments segregated under the headings of the different government services. The other section of this report requests the amount of critical materials, such as steel, copper, and aluminum used in the quarter which is being reported, an estimate of the commitments of this type of material for the following quarter, and an estimate of the amount of critical materials to be used for production of the items manufactured in this same quarter. It also réquires an estimate of usable inventory on the last day of this projected quarter.

This form was later superseded by form WPB 732 which replaced other types of forms as well as CMP7, reducing the number of forms to be filed and doing away with the duplication of information that was the result of overlapping WPB departmental organization. This form, in addition to the above information, requests the number of employees involved and the hours they worked. This was merely to complete, or round out, the picture of the entire plant operation.

What question of the above is too involved or too difficult to answer? A business should know what classes of products it manufactures. first objection to this statement would be made by those production elements called job houses. Their contention has always been the old argument that they never know what they are going to make. This seems to present a very short-sighted sales policy—not concerned with planned production but only working on orders from a day to day basis. While a business, in these war times, might exist for a short period under this type of sales management, the inevitable result of such haphazard course would be the change of management or the bankruptcy court. This is a very short-sighted policy, but-is it yours?

Basic Information

The number of units shipped and the dollar value of these shipments should be known and can be known through the keeping of a single set of books. These figures are elemental. Along with this answer, of course, is the segregation of accounts. Here again, you have the simple bookkeeping system which is no more involved than the establishment of a ledger sheet for each sales contract.

What does become a little involved is the matter of inventories. This subject is of the utmost importance to the WPB, and should, because of existing conditions threatening immediate competition in civilian markets, be the first concern of corporate administration. It is a well known fact that the cost of any item should be known before a sales price can be determined. This holds true whether a manufacturer is making screws, radios, planes, tanks, or guns. This estimated price is comprised of three factors-labor, material, and overhead. With reference to the question asked by this report, the classification is that of material or inventory. Once the amount of material necessary to the manufacture of one unit is obtained, the answer to the amount of material used is merely a problem in simple multiplication, i.e., lbs. times completed units.

Perhaps this is over-simplified, but, to keep a record of the material entering work in process is just the totalling of material requisitions. This is the job of Material Control. These figures should always be on tap and up to date. A successful production will never be obtained with a Material Control constantly running behind in their daily posting of these important records. The estimate of inventory for a three month period is naturally governed by the back-log of orders in the Sales Department. Again these requirements should be obtained from Material Control. Without the information, the business working under this handicap might just as well fold up its tents and silently steal away.

Accurate Estimates

This business of estimating requirements might seem, to some administrative officials, as useless red tape and unnecessary labor, but how else is the Purchasing Department going to buy in a constantly shifting market if requirements are not known in advance? How can a production schedule be insured if the estimated requirements of the organization are left to the winds of chance or to the guess of some minor executive or clerk?

Estimating is a guessing game up to a certain point. This estimate should be as accurate as is humanly possible to make it. There can be no objection to knowing what expected requirements and production will be in a future projection of any business. Without foresight, considerable advantages are lost. Price decreases and increases, scarcity of materials, and distribution problems are constantly recurring. The business able to utilize advance knowledge of certain situations relating to the operation of different aspects of their market will always be in the best competitive position.

The questions relating to personnel are again in the simple record form and figures are easily obtained from the paymaster's office. Any business failing to keep records that will answer the questions embodied in this report is not only in violation of WPB regulations, but is actually violating the fundamental laws of good business management.

Good Management Practice

This article has not been written to whitewash the faults of WPB Administration. It is granted that forms have been too long and duplication of effort has been too prevalent. It is also granted that information required on these forms for the purchase of typewriters, etc., has been wholly beside the point of purchasing a typewriter, and has no bearing on the case in hand. Taken all in all, however, these regulations, while they have produced at least sweat and tears, have not been as bad as they seem on the surface.

In the main, the foregoing has been written from the angle of a manufacturer who must use raw materials for the processing of his parts to be sold. The exact classification of this manufacturer is that of the job-house. The manufacturer of standard parts, that is, parts that have been manufactured prior to the war and parts whose specifications have remained the same to a great degree, has had to face almost the same problems and has had to keep almost the same records as this manufacturer of special items, with the exception that the manufacturer of standard parts has been forced by WPB Regulations to plan on the basis of past performance, a quarterly period of anticipated production. Where this division occurs between specialty manufacturer and standard manufacturer, the specialty manufacturer has been forced to speed up his Methods Department and Material Control Department to meet the demands of WPB and CMP regulation, and to enable him to request the required amount of material to meet his scheduled production.

Complete Records

This allotment was, of necessity, obtained in advance of the placement of his purchase orders. The standard parts manufacturer was in the ideal situation of knowing his past performance, and, as a consequence, was able to estimate his requirements on the basis of this knowledge of past performance. His work was the regular manufacture of the same items, day in, day out. Naturally, with this type of situation existing, it was a comparatively easy job to collate the necessary information from existing records. Here again you will note that records play the important part in this projection. Here again, accurate inventories are necessary in view of the fact that no manufacturer in business today can afford to be caught with a surplus of finished parts, whether they be standard or otherwise, in a market that from all accounts will be insecure at the close of war.

Fluctuating Market

Here again, the Purchasing Department must carry the ball in the matter of prices in a fluctuating market. Understand, this fluctuating market is a supposition. It is a supposition based on the trend that is

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Shelf Goods Are War Goods

New war procurement policy will prevent depletion of inventories by insistence on prompt ordering

By A. N. WECKSLER

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SEEKING to stimulate the products, the war agencies have agreed to a new policy of requiring wherever possible, that contractors and subcontractors place orders for components well in advance and give their supplies contractual protection.

The new policy will be activated by a contractual clause, to be inserted in all new prime contracts and extended to "immediate and mediate subcontractors and vendors."

Further—at least in the case of one major military procurement agency—any delay in delivery of an end product which is occasioned by a delay in placement of purchase orders for parts or components will not be excused, and may subject the contractor to the penalty provided by the contract.

To stimulate this program, the procurement agencies will lengthen their buying cycle to some degree, and will seek to project their purchase requirements at least through 1945 "wherever practicable".

Supply Backlogs Needed

The new steps taken by the procurement agencies were made necessary by the depletion of shelf products critical to war production. Manufacturers of "B" products, lacking contractual protection, tended to become over-sensitive to rumors of war's end. The consequent shortening of their inventory position began cumulatively to slow down deliveries of end products.

Without a proper level of inventory in the "B" products, the entire procurement program of the armed services would be jeopardized.

Backlog against which war procurement works is an adequate inventory of finished components, most of which are standard commercial articles. Those manufactured from "critical" metals are classed as "B" products under CMP. The program also is aimed at other common



WPB CHAIRMAN KRUG

. . when procurement cycles are shorter than production cycles, the war program is bound to suffer.

components which must be taken from stock if reasonable delivery schedules are to be maintained.

Shorter Buying Cycles

In normal times, it was the practice of many component and material producers to anticipate orders for general purpose equipment, and their customers generally accepted short delivery promises (usually representing merely assembly time) as the procurement time.

This same practice was projected into the war production cycle on both standard and special items as suppliers were called upon to build up a backlog of production.

Manufacturers have found that war program adjustments have, in

the past, left them with inventories produced in anticipation of orders which never materialized.

These experiences induced a high degree of caution among producers, and purchasing agents must take this factor into consideration. There the "B" product producers who previously were in a position to deliver specialty items on the basis of shelf inventory or assembly time, and who now must estimate delivery time on the basis of a complete production cycle.

This has had the effect of lengthening delivery time, in some instances from six weeks to six months.

During the past six months, the armed services have considerably

shortened their buying cycle, with a consequent reaction by the prime contractors and subcontractors in making firm purchase commitments for "shelf" items in the "B" product category.

There developed the evident reaction on the part of each tier in the contracting level to keep as close inventory-wise to his own production cycle as possible. This became most pronounced in the instance of the "B" product producer, who in anticipating the needs for shelf items had no comprehensive contractual coverage against his risks.

New Contract Clause

To partially cure this condition, the procurement agencies will insert a clause in all new prime contracts which conforms substantially to the following:

"The contractor shall place all subcontracts and purchase orders for materials and components (including "B" products as defined in the Controlled Materials Plan and other items normally taken direct from suppliers' stocks) required for the performance of this contract as promptly as possible and shall schedule deliveries thereof so as to enable it to adhere to, but not unreasonably anticipate, the schedule of deliveries set forth in Article—.

"Each such subcontract or purchase order shall expressly provide that the subcontractor or vendor shall place all its subcontracts and purchase orders as promptly as possible, that the subcontractor or vendor shall adhere to and shall not unreasonably anticipate the schedule of deliveries set forth therein, and that all subcontracts and purchase orders placed by its immediate and mediate subcontractors and vendors shall contain like provisions."

On all existing contracts, the War department is assigning officers who will follow through from the prime contractor through the chain to the producer of stock items, to see that all subcontracts and purchase orders have been, or will be promptly placed.

The net effect of this new policy will be to require prime and secondary consumers to promptly place subcontracts and purchase orders for the materials and components needed to meet the scheduled delivery of the end product.

Furthermore, the action taken by the procurement agencies in forecasting their needs, at least through 1945 where practical, should tend to

provide manufacturers with a better basis upon which to base their operations.

Risks Are Entailed

WPB Chairman J. A. Krug explained the program and the proposed solution as follows:

"If the 'buying cycle' of the armed services is kept short, it is often impossible for prime contractors to place orders with their subcontractors-and for the subcontractors, in turn, to place orders with their own suppliers-early enough to make certain that materials and components are received on time. A manufacturer of component parts, for instance, may readily produce ahead of his contract if he feels reasonably sure that the items he is making will be called for in the near future; but if the future demand for the products becomes too much of a gamble, he is apt to draw on his inventories instead of keeping his production rates up, so that his actual production of parts will not keep pace with the required production of the finished items into which those parts

"Of necessity, material and component manufacturers must assume considerable risk. This is inevitable from the very nature of the business and the rapid changes in the needs of the war. The Government should, however, place orders as far in advance as it can anticipate its firm needs and require its prime contractors to place the orders with their own subcontractors as quickly as possible. This is the effect of this new policy.

new policy. "During the final quarter of 1944, it developed that short-term purchasing policies were requiring these secondary producers to buy materials and make goods in anticipation of forthcoming orders that required delivery in a period shorter than the production-cycle time in the product involved. Fears of contract adjustments and terminations, in turn, led to indefinite production levels. With actual contracts, requisitions or purchase orders in the hands of the component manufacturers, and with these, in turn, supported by firm contracts held by the prime contractors, the secondary producers will be able to set firm production schedules to meet the needs of firm war programs."

The new procurement policy will not eliminate the entire inventory risk of the "B" product producers, but will place pressure on the prime and subcontractors to cover their

needs through firm purchase commitments as early as possible. In this manner, "B" product producers will receive a more adequate purchase order coverage of their projected production schedules.

The losses in inventory should not be considered as gross loss, in view of the fact that they are deductible in computing excess profit tax, and are taken into account in renegotiation.

Policy Is Defined

Statement as policy, as set forth by the War Production Board, in an official memorandum to all WPB Vice Chairmen, Deputy Vice Chairmen, and Bureau of Division Directors, follows:

"After careful consideration of this problem by the Production Executive Committee, the procurement chiefs of the Army and Navy and the other war procurement agencies and officials of the War Production Board, statements of procurement policy and supporting directives have just been issued by the Army and Navy procurement offices, which provide as follows:

"1. All Services and Bureaus are directed to place promptly contracts covering their forecasted needs at least through 1945, wherever practicable

"2. Prime contracts shall contain provisions requiring:

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a. prime contractors to place all necessary subcontracts, requisitions and purchase orders promptly with their suppliers, to assure receipt of needed materials and components in time for the scheduled delivery called for in the prime contracts.

b. their subcontracts, requisitions and purchase orders to contain similar provisions requiring their suppliers in turn to place orders promptly with their own suppliers.

"It is of the utmost importance that deliveries of military end products be not delayed through delays in deliveries of Class B products. Production in anticipation of actual orders will continue to be at the producers' risk, but the above policies calling for the placing of orders further in advance and the flowing down of orders promptly through subcontractors should reduce the risks so that, as a matter of business policy, manufacturers can afford to, and will maintain production at lev-

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XIV. PURCHASING IN AN EMERGENCY

By M. E. O'CONNOR

P URCHASING is not a visionary function. Since the post-war period of World War II has not yet arrived, and is not likely to be with us for some time to come, the immediate objective of government purchasing is planning for tomorrow-and tomorrow's problems of supply may be fully as critical as today's. This would seem, then, to be the time to strike a trial balance against pre-war planning, charging off omissions and failures as debits and recording accomplishments as credits. If the balance is "in the red", there is still time to even up during the second phase of the war period and to face Victory planning on the sound basis of well-earned experience. While it is true that the time to plan was yesferday, today is better than tomorrow.

At the outset of any emergency affecting supply lines, conservation becomes the watchword of the hour. All government purchasing officials should base their plans of conservation and procurement on the possible duration of the emergency and its after-effects. As shortages of supplies and equipment are indicated, a complete inventory of scarce items, verified and certified as to content, should be made in each individual instance, with the facts and figures made available for use individually

or collectively, as expediency demands. Briefly, such records should show what is on hand and on order with reasonable certainty of delivery; what is needed, subdivided as to essential and desirable items and possible substitutes; and what is surplus and available for transfer or other distribution. In addition, the proposed use of equipment and supplies should be surveyed, to assist in the study of alternatives.



The needs should then be classified within other priority requirements, and plans be put into effect for acquiring and conserving necessary commodities. "Critical lists" should be prepared and issued to all using agencies, with necessary instructions. In making up these

lists, standard stock identification of items should be used, to establish a uniform designation for each product, under whatever name it may be purchased. Otherwise the statistical value of records will be destroyed in the maze of different trade names applicable to like commodities.

Increased Production

As a companion measure, greater use should be made of the productive facilities of state agencies than in normal times. Resources should be pooled in the public interest and duplication of effort eliminated. Maximum production of farms, gardens and shops should be charted. The state should produce for its own use much of its own food, seed, fodder, fuel, and any raw materials that may be feasibly mined, produced, manufactured or processed. Root cellars should be put back into use, and storage space utilized and enlarged as necessary. Meats, fruits, vegetables and other home products should be salted, pickled, and preserved. Not an ounce of product or production capacity should be wasted, and information should be circularized regularly to make possible the full use of all available supplies and equipment.

The very root of conservation is maintenance and upkeep. Engineers

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should immediately check the plants under their supervision and make the small repairs that will obviate large replacements later on. All equipment and connections must be thoroughly inspected, taken apart as necessary, cleaned and oiled, since dirt and moisture are corrosive. Usable nuts, screws, bolts, parts and accessories must not be junked; outmoded equipment and furnishings must substitute for more modern and approved designs, within the limits of safety. Inspectors must be more thorough in their work if by so doing they can lengthen supply lines.

Alternative Bids

Since the immediate future of purchasing is still concerned with the problems of all-out industrial mobilization—whether for war or to rehabilitate our neighbors—government purchasing must continue in a highly competitive market, offset as may be by the volume of surplus commodities which will percolate into the field as Federal Government quotas are released.



Under industrial mobilization, resulting as it does in shortage of civilian production capacity and shortage of basic materials, the need of prompt delivery of articles adaptable to a particular purpose supersedes the desire for a particular type. This situation emphasizes a weakness in past procurement technique of the part of government purchasing agents, viz: failure to consider the question of alternative products and supplies.

Maximal efficiency in normal standardization and purchasing has been largely neglected through failure to prepare and index specifications by formula and possible use, as well as by standards of name and quality. Even under normal market conditions a buyer should know how many articles and commodities are available to serve a purpose, rather than relying on a single one. He

should also know the relative costs of each, and should consider accessibility of markets, adaptability, practicability, and durability of the respective products, as well as standards of composition. The need of this approach becomes more urgent in a sellers' market, and essential in the event of total war or other national emergency. Efficient purchasing requires that alternative bids shall be received on whatever commodities will well serve the purpose contemplated. Inauguration of this procedure, together with conformance with trade standards, should become a basic rule for centralized standardization and purchase, whether under normal or emergency conditions.

Purchasing agents must bear in mind that the only goods available under priority schedules are the following:

(1) Merchandise being produced or manufactured in large volume under standard specifications, of which there is available for civilian use a surplus over Federal Government needs.

(2) Merchandise more or less in the discard as to Federal Government use, because it is not produced to such standards, is not yet essential, or will not be needed in the quantities in which it is available.

(3) Merchandise already produced or manufactured and in the hands of vendors, available for purchase, with or without priorities, while the supply lasts.

(4) Merchandise which has outlived its usefulness to the Federal Government and is available for purchase, whether through trade or government channels.

In addition to alternative bidding there must be provision for alternative deliveries. Often full delivery of a term requirement—three, six, or twelve months' quantities-can be accepted at one time if the goods are available for shipment. In any event, the terms governing shipments in a priority market must be sufficiently elastic to fit the delivery schedule of the vendor, subject to the availability of storage to care for the articles properly on delivery. without loss or deterioration. This alternative must also extend to means of transportation, to avoid clogging the avenues of distribution of vital war products.

Purchasing in times of emergency and under conditions of industrial mobilization for emergency is daily writing new chapters in the history of standardization and purchase.

Some of these chapters may need to be discarded, for the good of the service. Makeshift legislation, regimentation, negotiated contracts, cost-plus contracts, buying on the basis of expediency rather than quality-price factors, should set no precedents for permanent procedure.

Loose methods breed contempt conservatism. Prolific tax moneys invite expenditure. Buyers have grown so accustomed to buying what they can get at any price that there may be need for a reminder that the men and women "over there" will have the bills to pay after they have won the war! On the other hand, accomplishment in the purchasing field has been so greatly impeded that purchasing agents may become discouraged and tempted to belittle their own at-tempts at economy. "What do one, two, or three millions of dollars in savings amount to, as compared with the total expenditures of the government? It is only one or two percent." Yet it is no small figure when applied to the reduction of the tax rate. If all public officials were to



do as well, consistently, year in and year out, they will have done their share for the war effort on the home front.

Effects of Regimentation

Federal regimentation of markets and supplies during times of national emergency has apparently become an integral part of political economy and must be accepted in planning policies and procedure for government purchasing. At the outset, therefore, of any national emergency affecting markets and supplies, representatives of state and local governments must take an active part in planning procurement and conservation in the public interest, rather than permit, through inertia, the adoption of ill-advised legislation and procedures. They must cooperate, exchange experiences, and produce a constructive, unified

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Regimentation of business and price levels for commodities, originating with the Federal Government, has not dealt kindly with state and local governments. One of the major economic projects of the past quarter-century has been the control of excessive fluctuations in the selling prices of commodities. The cycle of war, inflation, depression, and again war, has led to a multitude of experiments in this direction. Purchasing agents are reasonably familiar with the attempts to solve these problems through the NRA, the AAA, and the more recent myriad of alphabetical agencies at Washington.

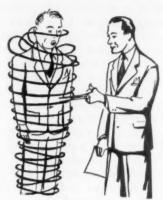
The arguments are advanced that there has to be a bottom to prices, lest industry destroy itself, and that there has to be a ceiling to prices lest industry destroy its customers. Yet under both basic and ceiling prices, state and local governments have found themselves paying higher prices proportionately than other consumer units affected by such regulations. This would indicate that they were "forgotten" at Washington during the planning periodpossibly because they had no organization to represent them, and no plan to offer. Weight is given to this supposition by the fact that the Federal purchasing bureaus, represented in the conferences, received favorable consideration in much of their administrative purchasing. The single instance of state and local government cooperation in 1934when representations at Washington brought a refund of millions of

dollars in processing taxes collected under the AAA, and relief from monopolistic practices, price fixing, and uniform bidding under the NRA—proved conclusively the value of a joint program.

The state should share in any legislation enacted for the benefit of the Federal Government in its administrative purchasing. The administrative problems of government, including that of institutional maintenance, are identical, whether these operations are under federal, state, or local governmental auspices, and should receive uniform treatment. All administrative divisions of government should be on an equal footing as to classification, priorities, and participation in planning policies and procedure. Through this coordination there would be more direct access to information and quicker response in the inauguration of conservation and procurement policies.

Eliminating Red Tape

The coordination of industry and Federal control of commodities and prices throughout the emergency of World War II have necessitated considerable revamping of procedure in government as well as in commercial purchasing. In many instances it has been necessary to abandon formal purchasing methods in the interest of insuring availability and speed in the production and delivery of supplies and equipment. The more progressive states have enacted legislation making it possible to scrap red tape and inaugurate simplified procedure as necessary in the purchase of articles listed on government priority sched-



ules. Few of them, however, have hedged this prerogative with increased limitations on and penalties for ulterior interest in state purchases—a seemingly necessary safeguard. Purchasing officers acting under such emergency powers lawfully conferred, may purchase on any competitive or non-competitive basis honestly inaugurated in the best interests of the community, within the price ceilings fixed by the Federal government, but they are responsible for due diligence in studying markets and locating supplies.

Acting within these statutory limits, purchasing officers may amend their rules and regulations, and suspend the use of mailing lists and the terms of the Bidders' and Contractors' Manual as may be feasible. It is their responsibility, however, to record the facts and certify that purchases under this grant of power are made on the best terms obtainable for acquiring a supply of essential commodities.

As a substitute for regularly advertised bids openings, public advertisements or bulletins can be



posted, calling attention to the needs and requesting trade sources to submit their offerings. It may even be necessary to send out scouts to locate essential commodities at the source, and to prevail upon the owners to sell them to the state on their own terms, reduced to writing. Indeed, it may be advisable to

THE BALANCE SHEET OF EMERGENCY PURCHASING

CREDIT

Increased attention to conservation

Greater use of production facilities of state agencies

Study of possible alternative materials

Greater attention to durability

More opportunity to use purchasing judgment and experience

Short cuts in method, eliminating red tape

DEBIT

Fewer supplies available

Sellers' market prices at ceiling levels

Loss of preferred market position by public buyers

Regimentation under government controls

Suspension of economic influences

Makeshift legislation, and weakening of public safeguards

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do so as an economy, since the commissions allowed to jobbers and commission merchants under ceiling prices are substantially higher in many instances than those previously or normally charged by these dealers. Some of the salesmen displaced by industry through change-overs in production will be efficient in this field because of their knowledge of direct sources of supply. Necessary articles and equipment can be obtained without disrupting nationally planned schedules and within applicable laws and regulations. There should also be a continual check with Federal authorities to act as a curb on "black markets" and excessive prices.

Throughout the present emergency many elements have contributed to a situation whereby the state and local governments have lost some of their best markets, and are paying alarmingly high prices for commodities purchased, as compared with Federal administrative expenditures and Federal statistics on the cost of consumer goods. There are people who minimize this situation, since it is easy to get extra appropriations on the plea of "emergency". Others are entirely unmindful of the fact. Even legislators and public officials who scan budget figures very closely as to comparative totals may have failed to note the extent of this trend for the simple reason that the 25% to 40% cut in the quantities purchased in many instances has leveled off the percentage of increase to a point where decreased quantity balances increased price, and the net budget increase for commodity purchases is, therefore, not noticeably out of line with consumer statistics. It is the duty of the purchasing officer to call attention to these facts, lest in the final analysis he is found inefficient for not pointing out a trend so vital in governmental financing.

Costs Are Increasing

Although, throughout the period of emergency, ceiling prices have shown a tendency to become bid prices, there has been a scarcity of bids and, at times, the inmates of public institutions have actually been deprived of their just share of consumer merchandise. Manufacturers and producers claim that this is because they cannot sell to the government agencies at a normal profit within OPA ceiling prices. The natural question is, "Why not?" These same manufacturers and producers were selling to the state in the pre-

war period at whoelsale prices, and even better than wholesale in many cases. What has happened to change the status of government from the most desirable to the least desirable of customers?

One of the answers is that in a sellers' market business is exercising its option of selecting its customers. Perhaps government purchasing agents have not realized how deep seated is the prejudice against red tape, and how thoroughly government procurement systems have been tarred with the brush of inefficiency because of the tactics of a limited personnel. As one salesman expressed the matter:



"There is no goodwill in government business. Today we have it and tomorrow we don't. No matter how much effort we spend on it, the results are as uncertain as the throw of dice. And it is so bound up with restrictions and extra costs that the reputable government purchasing office takes its place with the one that is an actual nuisance to the trade. Some government agents quibble over technicalities, require large bonds with contracts, charge all manner of inspection and other costs to the vendor, pay the bills when they please with the money waiting for the payment, and even take advantage of cash discounts on delayed payments. They consider themselves privileged characters and refuse to conform to ethical business practices. Ceiling prices make no provision for these additional hazards. When it comes to a sellers' market of this kind we reduce our customer list in proportion to our decreased supply, and government on the whole just does not rate as a desirable customer. We expend our efforts in a direction that will assure us goodwill on which to capitalize after the war is over.

Possibly some missionary work on the part of responsible purchasing



agents, acquainting the trade with the objectives, problems, and dilemmas of government purchasing—including the need of maintaining the helpless wards of government in eleemosynary institutions—together with a wholesome revision of questionable practices, will halt any move that may be in the making to carry this prejudice over into the post-war era, through the permanent establishment of government procurement in a less desirable market and price classification.

While the present plight as to lack of bids and the necessity of accepting bids which are not advantageous is serious, this danger of carrying high prices into the future is a greater economic threat. There is an apparent tendency on the part of Federal agencies to freeze trading and prices at customary levels, based on a given period. Will state government purchasing agencies-and local ones as well—lose their favorable market classifications of the past as a result of accepting higher prices for merchandise today? Since ceiling prices of today may become the price floors of tomorrow, the situation should be anticipated before state and local governments find themselves permanently classified as near-retail cus-

Ordinarily, the law of supply and demand might be depended upon to solve this problem, but the prospect of continued government regulation to stabilize industry in the post-war period injects a deterrent to this natural curb. And even though markets do react eventually to the stimuli of competition, a plan is needed for the intervening years. Since there is likely to be a long period of continued regimentation of supplies, public purchasing officials should be practically, legally, and ethically in better position in the future to meet the problems arising than they have been to date, throughout the existing emergency.

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JUST the other day some guy— I've forgotten his name—got this economic gem out of his system:

"Today, more than ever before, I believe that the best hope for our economic future lies in this simple formula: High wages and high farm purchasing power plus all possible improvements in industrial and farm production methods plus mass production at the lowest possible prices equals full employment, full prosperity and the full democratic development of our natural resources for the benefit of all of us—labor, farmers and management."

Now ain't them noble sentiments? So are the Ten Commandments which we have been trying to get adopted for nearly two thousand years. We all believe in them—for the other fellow.

Income and Taxes

I believe in high wages,—could use a few of them myself. I've tried my damnedest, but some dollar-bespangled plutocrat has always managed to get there first with the most guns—probably wadded with folding money. How are we going to get these high wages? How can we soup the safe and get away with the moolah without having to explain it to a jury?

I think what we are after is not so much high wages, as a liberal stipend without having to work between meals to get it. High work for high wages? Not by a damsite.

DOGHOUSE ECONOMICS

Instead of worrying about the hangover, we might be smarter to do something about the jag and use a little practical horse-sense

By CHARLES FORD

We want to work as little as we can; so there will be a chance for trading talk when next we decide to point a Tommy-gun at the old man. Does anyone suggest we produce more units for more pay? No, no; that ain't fair—there wouldn't be anything left to use for trading talk.

Deficit Financing

And how are we going to get high farm purchasing power? Hell, that's an easier one. All we have to do is get the government to pass it out. Put an alphabetical checkvalve on the price we pay for groceries so the farmer absolutely can't live at the price; then slip the farmer enough dough on the quiet to keep his mouth shut. That way we get 'em going and coming. We make up the farmer's losses and he votes for us. We keep down the family grub bill and the whole damn' family votes for us. Meanwhile we frisk both of them on tax day and they never get on to the game.

It seems not to occur to various folks that if the farmer took a brace for himself and learned his business and his markets so as to get his own production costs down we wouldn't have to kitty out for him every time a new hand is dealt. The farmer ought to be handling enough kale, all his own and earned regularly, so that he would be insulted at the suggestion of a government handout.

The matter of mass production at the lowest possible prices is easy. Just bludgeon employers into higher wage scales and shorter hours; produce just as damned little as we can and keep our place at the pay-

office window. Employers are lush with kale; if they're not, they ought to be, and anyhow, they can always go to the bank and get more. If we don't shoot it out with the bosses how are our union leaders going to get to Miami in the winter?

This talk about overhead-don't you know that overhead is a synonym for boloney? What if a factory has to pay rent and interest and taxes and clerk-hire and light and heat and power and insurance, to say nothing of bacon and beans for the owners? What difference does it make, with these trivial items going on nights and Sundays and holidays, whether the place turns out one thousand or one million of a given gadget per annum? You can't tell me there is a difference in the per-each cost of a thousand or a million with the same overhead, and what if there is? We don't own the factory; and if the owner ain't slick enough to get the government to make up his deficits, what use is he anyway? What's a government for if it doesn't take care of the lads?

Nix, brother; what we want is damned little work and a lot of dough for doing it. Office hours twelve to one with an hour for lunch, and overtime if we happen to get in early.

Let 'Em Eat Guns

One of our Spanish war admirals remarked that there's no way of making war a safe business. It's equally true there's no way of running a war economically. But when I hear the repeated excuse—"Don't you know there's a war on?"

—I wonder if we are half as smart as we think we are.

In the good old days, when the government reports indicated we were going to have good crops, everybody felt sure his income was safe for another year. We knew where we could sell the crops and get real money for them. It has been many years since we could sell all we raised, so our home-made economists have spent their time trying to side-track the inexorable law of supply and demand, shove governmental props under prices of farm products and tax the rest of us to pay for them. We have ten or twelve million jobless and without prospects for eating. Industry couldn't sell enough to employ them usefully so they could buy their own. We couldn't sell all the oil and coal and steel and wheat and cotton, and we couldn't eat them raw. Altogether, we were faced with a hell of a situation when we got ourselves into a war.

Then a curious condition came to light. We thought we had all the merchandise and man-power in the world, and the first thing we waked up to was the fact we didn't have enough of anything. We had to dive into the scrum with the rest of the world, trying to snaffle enough to get by. Now we are going—some day—to come out of this man's war over-supplied with everything. For a time we won't know what to do with it all. You can't eat bazooka guns and plane propellers. If we give them all away to the Kaffirs and Arabs and Patagonians, their teeth aren't too much better than ours. And there ain't much profit in giving the stuff away and prepaying the freight. We will beat swords into plowshares and then try to find somebody to buy the plowshares and use them.

We are headed for an aggravated case of athlete's heart, seems as though.

Learning the Hard Way

The one shining light of production, setbacks and all, has for years been the motor-car industry. When the shootin' started, they had the plants and the skill to turn over to armament. They had learned their business the hard way—bucking one another every inch of the road—and they knew what fighting meant. I have no doubt they will welcome a return to reason via the competition route. When they have rolled off the last jeep from the line, they will know more about making motors

than ever; they can make more cars and cheaper cars.

But if all we can make and sell for the domestic demand won't keep our athlete's heart from fatty degeneration. We must sell the world; and I mean sell, not give away. Business which includes raising hogs and hominy and eatin' terbacker—supports the world. The greatest civilizing factor has always been trade that brings the rolling peso home to papa. As long as the countries of the world can trade peaceably and profitably with one another we won't have time for wars. And the greatest manufacturing genius in the world won't be able to turn a trick if he can't sell the stuff he makes.

We are coming out of this man's war with ships to carry the trade of the seven seas; are we going to let them rust in the North River? Unless we figure out how to carry merchandise to the four quarters of the globe as cheaply as anybody, we will look like a one-armed pugilist against Jack Dempsey.

There are about 9000 purchasing agents enrolled in the National Association: there are at least 9000 assistants. Suppose there are 9000 whose bosses are too tight to pay their association dues, with, in turn, 9000 assistants. That adds up to

about 36000 blowed-in-the-glass purchasing agents and would-be purchasing agents. Did you ever stop to think what this aggregation of buyers — Frotestant, Catholic, Jew, with maybe a sprinkling of Mahometan, Buddhist and Parsee — could do in the way of ironing out business absurdities if they would widen out a little and get their minds turned to the situation? We have the farm bloc and the labor bloc and the silver bloc and all the lesser blocs, pooled together to gather in the swag while the gathering is good.

What couldn't 36000 purchasing men do to help us back to sanity if they would put in a little overtime at it?

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Economists are mostly people who have nothing to do with economy. But many of them expect, once the war is tidied away, a moderate postwar depression, followed by a boom that will keep on booming for eight or ten years. There's a hangover after every jag; if we want to escape the hangover we'll have to go easy on the jag. We know there will be the hangover, so we'd better plan for it. You never saw a boom without a reaction; the boom is fleeting, but it takes a hell of a while to get over the headaches.

The doghouse still looms.

Changes in Navy Procurement



Comdr. E. P. McGuire

Navy Department the following changes were made: Mr. Vincent deP. Goubeau, formerly Deputy Chief of the Procurement Branch of the Office of Procurement and Material, succeeds Mr. Lionel J. Noah as Assistant Chief of Procurement and Material in Charge of Procure-



Vincent de P. Goubeau

ment. Mr. Goubeau has been with the Navy Department since early in 1942, being on leave of absence from the United Fruit Company of Boston where he was in charge of purchasing. He is widely known among purchasing agents through his active participation in New Eng-

(Continued on page 319)

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FLUORSPAR—A Vital Material

By J. F. BELL and C. E. BRADLEY, JR.

Bureau of Economic and Business Research University of Illinois

THE war has brought many materials and industries into the limelight. The production and use of fluorspar which was distinctly limited before the war, has now become a material and industry of first rank importance. Despite the many uses to which this mineral has been put, its real place in our economy has not yet been realized. To date, however, it is apparent that this mineral is as important in our industrial warfare as copper, nickel and manganese.

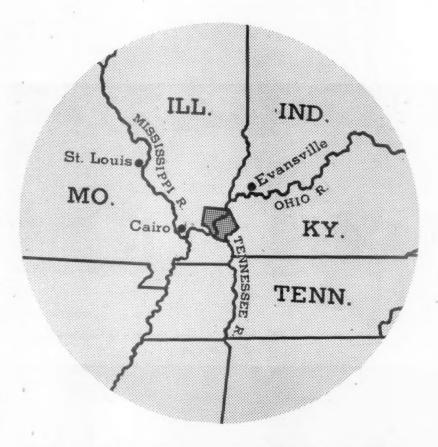
Little publicity has been given the industry due in part to the smallness of its total output, which in 1942 was approximately 9 million dollars. By comparison with the great output of a concern like Anaconda copper, the annual dollar volume of the entire fluorspar industry is small indeed. Its strategic importance, however, must not be overlooked.

Concentrated Production

The fluorspar industry is virtually centered in an area of about 40 miles square overlapping the two states of Illinois and Kentucky. Hardin and Pope counties in Illinois and Crittenden and Livingston counties in Kentucky produce over 80% of the domestic production of fluorspar. In 1942 Illinois led all states with a production of 161,949 tons, 45% of the nation's total, and Kentucky followed with 134,133 tons, 37.3% of the nation's total. The remaining production is scattered among the states of Colorado, Arizona, New Mexico and a few other western states.

Fluorspar is a non-metallic mineral composed of calcium and fluorine and closely resembles quartz in appearance. It is fairly heavy, weighing around 200 lbs. per cubic ft., (for comparison bricks weigh from 87 to 137 pounds per cubic foot), and is both brittle and crystaline in form. Fluorspar as usually found is white in color, but a variety of tints

The production of fluorspar is inherently a small industry — involving less than 3000 workers and 9-million dollar annual output at its present all-time peak — but it is essential to such giant industries as steel, refrigeration, aluminum, synthetic rubber, high octane gasoline, optics, and ceramics



Eighty percent of domestic fluorspar production is centered in an area 40 miles square, on the Ohio River

may also be found such as blue, green, pink, brown, and sometimes black, depending on the proximity of other minerals. Occasionally perfectly transparent spar is found which forms the "optional grade" of fluorspar.

Principal Markets

The uses of fluorspar are as interesting as they are critical. Its principal market is the steel industry which in 1942 took 71% of the annual domestic tonnage, which amount was only 61% of the total value, however, due to the fact the steel industry uses a lower grade of product. Gravel sized fluorspar ore

(that which will pass through a 1-inch screen) of about 85% purity is used as a flux in the open hearth and electric furnace methods of making steel. When the iron ore is placed in the furnace, it contains, besides the iron oxide, a large amount of impurities (such as clay and sand) called gangue. As the furnace is heated this gangue floats to the top of the molten mass (combined with added lime) and then becomes what is known as slag. Fluorspar is added in amounts varying from 8 to 50 lbs. per ton of steel, depending on the type of steel desired, which converts this slag from a sticky and unmanageable mass to one that can

be easily drawn off from the furnace. At the same time the addition of fluorspar permits the furnace to run at a lower temperature than was

otherwise possible.

Fluorspar is the derivative or source for most of the commercially used fluorine in the United States. The percentage of fluorine for any given amount is higher in fluorspar than in any other commercial found compound of fluoride, with the exception of cryolite. Cryolite has had important use for many years in the manufacture of aluminum, but it is found in commercial deposits in only one place in the world—Greenland. Because of the remoteness of these deposits, wartime shipping, stringencies, and the desire and feasibil-

ity of having other sources of supply, synthetic cryolite is now being manufactured from fluorspar. In fact, two of the best mines in the Illinois and Kentucky districts are owned by the Aluminum Ore Co., a subsidiary of the Aluminum Corporation of America.

Fluorspar is the basis for another product which is used every day in the homes and industries throughout the United States. Its commercial name is Freon, and it is the gas that is used in the majority of the mechanical refrigerators, cooling and air conditioning swstems. While there are other gases that can be used for the same purpose, none have the same qualities that make Freon so desirable—it is non-toxic,

non-corrosive and non-inflammable. In peacetime, this commodity was shipped by the hundreds of tank car lots and at the present time, its production is the highest in history, although exact figures remain a secret. Thus its present inaccessibility for civilian uses is a good indication of its importance in the war effort.

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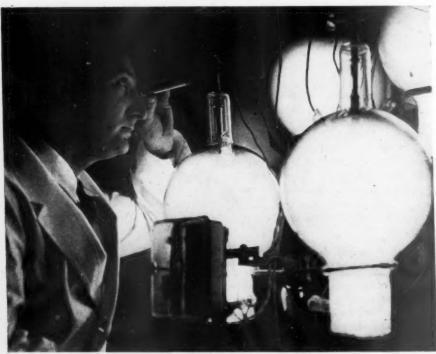
Freon has another extremely important use which has developed and amplified because of the international character of this war. International air and maritime transportation, must abide with health regulations of different countries that require a vessel or plane to be fumigated before entering its boundaries from another country. It is clearly impractical to halt a plane outside a "harbor" for this purpose hence some procedure for quick and safe fumigation became a necessity. Soldiers fighting in the tropics find their health impaired and threatened by disease carrying insects against which hand sprays are singularly ineffective. As a consequence a fumigator "bomb" was developed-op-

erated by Freon.

This bomb is a small cylindrical metal tank that fits well into the palm of the hand; it is filled with an insecticide and Freon in liquid form, which has the property of boiling at minus 19 degrees Fahrenheit. To start operation, a small cap is removed from this tightly sealed container which reduces the internal pressure and permits the Freon to boil. The vapors from this boiling Freon burst from the small aperture and carry the insecticide with it. The interior of a plane, a soldier's tent or hut can be filled with insect killing ingredients in a matter of seconds. This bomb not only fumigates quicker and more thoroughly, it will also last 20 times longer than an ordinary spray. . Nor is this "bomb" limited to fumigation. By changing the contents it can be equally well adapted for use as a paint spray or fire extinguisher. This product should find a great market when this country returns to peacetime production.



The steel industry takes 70% of the fluorspar tonnage to facilitate the handling of slag



The translucency of "white glass" used in electrical tubes depends on fluorides, derived from fluorspar

Miscellaneous Uses

Fluorspar, as the basis for hydrofluoric acid, is very important as a catalyst in the manufacture if 100 octane aviation gasoline. The present consumption for this purpose is a military secret, but since hydrofluoric acid is only made from fluorspar, the rise in the amount of fluorspar going to the chemical industry is undoubtedly due to this factor. Fluorspar is extensively used in the ceramic industry to give the whiteness to the porcelain finished bathtubs, refrigerators, and the like. The translucency of the glass used in electric light bulbs, light shades and other "white glass" is due to the use of fluorides, which in the main are derived from fluorspar.

Optical fluorspar has been used for some time in the manufacture of scientific instruments. Fluorspar, unlike ordinary optical glass, will permit the passage of ultra-violet light, has low refractory power and color dispersion, but in order to be used in accurate scientific instruments, flawless crystals must be used which are difficult to find in nature. A company in Ohio has developed a process to manufacture crystals from lithium floride, which can be used for optical purposes and as a substitute for optical fluorspar, but this is more of scientific than of economic importance as the percent of revenue from the sale of optical fluorspar is very small.

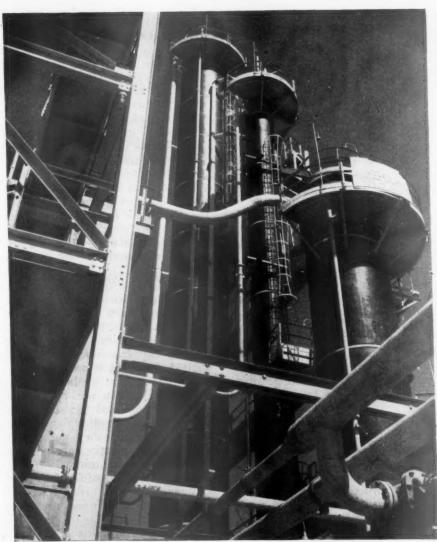
In the manufacture of synthetic rubber some processes use products derived from fluorspar, but since a number of processes now being used are still in the experimental stage, the extent of its use in this field is

difficult to determine.

Small Operations Are Typical

These are but a few uses for fluorspar and its derivatives, and, although it is unlikely that fluorspar will receive any increased importance of use in the steel industry, improved technical processes have, and probably will continue to increase the prominence of fluorspar for chemical uses. Very significant is the rise in the proportion of the amount of acid grade fluorspar consumed to that of a metallurgical grade. In 1941, the percentage of acid grade used to that of metallurgical was 24.6%; while it is estimated that in 1944, the percentage of acid grade used will amount to 66%.

While fluorspar is very common and is found in many parts of the world in connection with other minerals, this Illinois-Kentucky area is one of the very few places in the United States where ore is found with fluorspar as the dominant mineral. The spar is found here in vertical veins running to great depths. These veins occur in faults in the limestone rock, which is common to that district, that were caused by prehistoric subterranean upheavals. It is highly speculative and debatable as to just how fluorspar deposits



New products like synthetic rubber and high octane gasoline use fluorspar in production processes

formed in these cracks or faults. One theory is that hot solutions containing fluorspar were forced into these cracks where it cooled. Another theory is that solutions of fluorspar flowed into the cracks, chemically dissolving the limestone depositing the fluorspar in its place. Near Cave-In-Rock, Illinois, fluorspar solutions were trapped under a large layer of shale and spread out into mushroom shape, causing fluorspar deposits near the ground level that are easily worked by open pit methods of mining. This type of deposit is unique to this locality.

The fluorspar industry, as indicated, is relatively small. There are but 5 operators in the district who employ more than 100 workers, and there are 22 others who employ between 10 and 100 men. The important producers are in these two groups, although there are several hundred small scale mines who employ less than 10 men. The last categroy consists mainly of farmers

who have small deposits on their land which they work by crude hand methods at irregular intervals. Their production is significant only in the aggregate and they market their product usually by selling to the large mines. In all, between 2,500 and 3,000 workers are actively employed in the fluorspar industry in the Illinois-Kentucky district.

Costs and Prices

The greatest single cost in mining operations is that of labor, although in the larger, more mechanized companies this item takes a lesser proportion to the total cost. The labor supply is unique in that it is almost entirely native of the district and in many cases engage in mining to augment a meager living from farming. These men are very independent in nature and labor organizations seem to have made little headway except in a few of the largest mines.

The average wages paid in the fluorspar industry in this district

POSTWAR USES FOR FLUORSPAR ARE DIVERSIFIED

Steel
Aluminum
Freon
Refrigeration
Ceramics
Optical Goods
Fluorine
Synthetic Rubber
Paint Spray
Disinfecting
Fire Equipment
Glass

have always been below the average paid in other mining and quarrying operations. The War Labor Board figures show in April of 1943 the weekly earnings in the fluorspar areas averaged \$29.49 against all other mining operations which averaged between \$39.15 (for iron mining) and \$45.41 (for copper mining). This figure in actuality should show a wider spread because the data used for the fluorspar industry figure were obtained from the larger mines only, which in general pay higher wage rates. In July, 1943, the wage rates were raised in the area by order of the War Labor Board to settle wage disputes which were curtailing this vital production. The wage rate in every bracket was 10 cents higher in Illinois than in Kentucky which keeps the usual differential in rates between the two

During the last war, the value of all grades of fluorspar jumped from a price of around \$6 a ton to over \$25 between the years 1915 and 1919. This phenomenal jump has been attributed mainly to increased labor costs. The significant fact re-

mains that the price of spar did not recede to its former level when the war was over, but remained in the vicinity of \$20 except during the depression year 1933 when it reached \$15 per ton. From the year 1935, the price has been climbing steadily upward until it now has reached a peak of around \$35 a ton, most of this increase occurring since 1941. If a similar price situation occurs after this war, combined with possible increases in other mining costs due to depleted and more inaccessible deposits, it may have important consequences on other industries, especially those using spar as a primary raw material.

Improved Mining Practices

Because of their lack of capital, the smaller miners have been unable to prospect for further veins and to develop their mines in the proper way. At the same time their mining methods have not improved technically and wasteful methods of operation are still in use, both as to mining the ore and the separation of the ore from the other minerals in whose connection they are found. These mining practices are not the "fault" of the small miners. Where veins are new, accessible and easily to mine, these methods were the most economical, if not the most efficient. However, as ore deposits go deeper and the veins worked are of diminishing quality, new methods are necessary to economically handle them, which the smaller miners are financially unable to provide.

Several of the larger and incorporated mines are captive companies which in some cases seem to offer more as an assurance of future supply than as a profit making proposition. However, their better financial position has made possible more

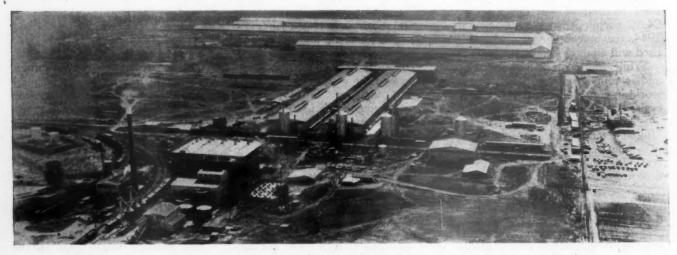
efficient means of operation which is very important at the present time of excessive demand. For example, two new methods of separating ore from the other minerals (known as the "float and sink" and "flotation" methods) have made it economically possible for the mines to re-process tailings from past inefficient separation processes, that were, until the present, waste materials.

Market Factors

As the mines are somewhat removed from the locality of consumption, transportation charges form a relatively high percentage of the total cost to the consumer. The Ohio river furnishes accessibility to barge transportation, especially to the mills of Pittsburgh and Ohio. However, figures show that in 1936 only 28.9% of the total fluorspar traffic moved by the Ohio River. This may be explained by the fact that the main markets for fluorspar of the Illinois-Kentucky district are the Chicago and St. Louis industrial areas, Peoria, Duluth, Birmingham and Kansas City, although the latter secures some spar from the Colorado and New Mexico mines. The mills at Pittsburgh, and in Massachusetts, Rhode Island and other eastern states are much nearer the Atlantic Coast than to the Illinois fields, and in these markets the Illinois-Kentucky miners face keen competition from foreign imports. Thus a small difference in transportation rates would cause a rapid shift of markets. as the fluorspar for steel purposes does not differ in quality from any producing area.

Foreign competition is of course greatly reduced at the present time and the Eastern and Pittsburgh steel mills are demanding Illinois spar. In

(Continued on page 320)



The tremendous expansion of aluminum production calls for fluorspar to replace scarce Cryolite

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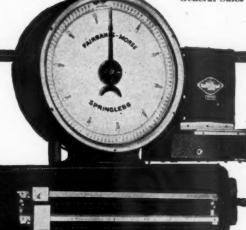
"A name worth remembering"

FAIRBANKS-MORSE

Fairbanks-Morse postwar products will serve you with the dependability the world has come to associate with our name. Designing and manufacturing skills will not have to be re-learned in our plants as we turn to civilian production, because as a part of our war job, we've continued to build and improve our peacetime Diesel engines, generators, motors, pumps, and scales.











BUY MORE WAR BONDS

Fairbanks-Morse Scales are far more than lastingly accurate weighing instruments. They are production tools, too. They speed manufacturing and distribution by counting parts and products, by weighing while materials are moving, by printing weight records, by weighing and disbursing preset amounts automatically, by guarding ingredient proportion secrets, and by performing many other often amazing services.

SCALES

FAIRBANKS, MORSE & CO. CHICAGO 5, ILLINOIS

Diesel Locomotives • Diesel Engines
Scales • Generators • Motors • Pumps
Magnetos • Stokers • Railroad Motor
Cars and Standpipes • Farm Equipment

STEAM PICKLING JET



NEW steam jet for pickling tanks is announced by the Youngstown Welding & Engineering Co., Youngstown, Ohio. It is known as the Weldco Steam Jet. It agitates pickling liquid in any size

tank. Benefits claimed are faster, better job pickling; strength of pickling acid kept uniform; reduces steam hammer, longer tank life, and long service life. May be located anywhere in tank. Parts are made of wrought Monel and welded with Monel electrodes.

FOR ETHYL ETHER VAPOR APPLICATIONS TOTALLY enclosed fan cooled motors constructed to meet the specifications of and carry the label of Un-

derwriters' Laboratories, Inc., for Class I, Group C installations—where the surrounding atmosphere is charged with Ethyl Ether Vapor, are described in catalag page 53, issued by Century Electric Co., St. Louis 3, Mo.

CLEVIS RING



ILLUSTRATION shows the new clevis ring introduced by Poulsen & Nardon, Inc., Box 2398, Los Angeles 54, Calif. The ring, made to exacting dimensions from alloy steel, formed to retain

the full strength qualities of the steel, can be produced in a simple stamping operation. Each one is cadmium plated, and conforms to specification ANQQ-P-421. The strength factor is said to be in excess of the cable with which it is used. Fits any standard cable terminal.

KIT FOR GENERAL SOLDERLESS WIRING

GENERAL solderless wiring kit is announced by Aircraft-Marine Products, Inc., North Fourth St., Harris-

burg, Pa. It comprises a 6-purpose precision installation tool which cuts and strips the wire, indicates stud sizes, and crimps terminals to the wire. 100 solderless terminals are included in kit. Wire is inserted in terminal barrel and crimped with tool.

STOKER SAVES FUEL



SPREADER-TYPE stoker based on one of the latest improved methods of low cost steam production, is announced by American Engineering Co., Philadelphia 25, Pa., "Streamlined with

a purpose", this modern, completely automatic stoker burns all kinds and grades of solid fuels, including by-products and plant refuse, wet or dry. It can be installed under most existing boilers to produce steam from 175 H.P. up to 200,000 lbs. per hour. Advantages that are claimed to cut fuel bills and boost efficiency include: fully protected mechanism, accessible without tools; simple controls; water cooling; long-life grates with power dump, and other features. Descriptive bulletin available.

DURA-BONDED COATED ABRASIVES TREATMENT known as Durabonded, is announced as improvement in coated abrasives by

ed abrasives by Behr-Manning, Troy, N. Y. The treatment hardens the adhesive and makes it more resistant to heat and less sensitive to humidity. Claim is made that treatment makes for longer life on fast running belts, fibre combination discs and other abrasives.

FLASHLIGHT BATTERY CHARGER



SINGLE unit charger for rechargeable wet flashlight storage battery, which can be operated from the ignition system of automobiles, trucks, buses, tractors, boats, or airplanes, is an-

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nounced by the B. F. Goodrich Co., Akron, Ohio. Unit is designed for easy attachment to dash, cowl or other convenient place, it does its work with the vehicle either running or idle. It operates on 6 volts and 12 volts, direct current. Connecting wires are red and black so ignition wires can be correctly tapped.

CONTAINERS MADE OF CELLULOSE ACETATE FEATHER-WEIGHT containers are now being made of cellulose acetate, combining toughness

and transparency. They resist the action of salt, mild alkalies and acids, and water. In special casting process, walls can be paper thin, as low as 3/100 of an inch. Cellulose Products Department, Hercules Powder Co., Wilmington, Del.

DUAL-PURPOSE SAFETY NUT



ILLUSTRATED is the dualpurpose safety nut
announced by the
Simlok Fastener
Division of the
Simmons Machine
Tool Corp., Albany, N. Y. It
features installation ease, safety

and low cost. The principle consists in the engagement of a snap ring in one of a number of longitudinal serrations in the bolt thread. With seven serrations on the bolt thread there are 14 locking positions per revolution of nut. It can be used on any length thread.

(Continued on page 118)

ONE SOURCE FOR MORE THAN

4000 different kinds and sizes



Installing a piping system can mean time-consuming scouting and the fuss and bother of split-buying unless you go direct to the source for the most complete line of welding fittings and flanges—the Tube-Turn distributor. There is one in your locality.

His line of Tube-Turn welding fittings and flanges consists of more than 4000 different kinds and sizes—all of which are produced as a standard part of the line! He carries a comprehensive stock of these Tube-Turn items, and in most cases he will have exactly what you need for immediate delivery.

But the Tube-Turn distributor is

more than a merchant. He is a pipe and fittings specialist who can give you a lot of bona fide, trouble-shooting engineering assistance. And—through the company's many branch offices and the famous Tube-Turn laboratory in Louisville the Tube-Turn distributor is backed for service by the nation's finest group of welding fitting engineers. They are the men who *originated* seamless welding fittings, and therefore have the most years of accumulated experience on tap for you.

Remember, Tube-Turn seamless welding fittings were the first. They are still the best.



THE COMPLETE LINE OF WELDING FITTINGS AND FLANGES

Selected Tube Turns Distributors in every principal city are ready to serve you from complete stocks.

TUBE TURNS (Inc.), Dept. PU-3, LOUISVILLE 1, KENTUCKY. Branch Offices: New York, Chicago, Philadelphia, Pittsburgh, Cleveland, Dayton, Washington, D. C., Houston, San Francisco, Seattle, Los Angeles.

MARCE



WILLSON No. 5 and 45 Lightweight Respirators with easily replaceable filters protect workers. They remove harmful dusts and mists. Bureau of Mines Approvals for various hazards. Filters tested for low breathing resistance.

SAFE



Two sizes for wide range of faces assure safety of a good fit. Form molded rubber facepiece prevents leakage at edges. Adjustable headband and nose spring maintain tight seal.

COMFORTABLE



Comfort features of Willson Respirators make them easy to wear. Their light weight requires little headband pressure. Compactness permits full vision—safety goggles can be worn. Washable cotton FACELET* protects face.

*Trade Mark Reg. U. S. Pat. Off.



Get in touch with your WILLSON Safety Service Distributor for full information. Or write Dept. P-6.

GOGGLES . RESPIRATORS . GAS MASKS . HELMETS

PRODUCTS INCORPORATED
READING PA JUSA State shed 1870

SEALED BALL BEARING



ENTIRELY new type of sealed ball bearing known as "Plya-Seal" is offered by the Fafnir Bearing Co., New Britain, Conn. The sealing element consists of a diaphragm-type, contact seal compris-

ing two members—a flat, flexible sealing washer of synthetic rubber-impregnated fabric and a split retaining ring of spring steel. Except in extra small sizes, Plyaseal bearings are held to the same widths as standard unsealed bearings. The Plya-Seal can be easily removed and replaced to allow inspection, washing and re-greasing. Illustration shows the Plya-Seal disc wedged into the outer ring. Seal is non-capillary and impervious to grease, oil, gasoline, water and a variety of solvents.

MOTOR ATTACHMENTS FOR JACKS MANUALLY operated jacks that can be converted for motor operation by means of attachments are an-

nounced by the Duff-Norton Mfg., Co., Pittsburgh, Pa. The attachments are made in two types, which are said to be quickly and easily attached, making possible the use of portable shop motors of 1½" to 2" drill size to power jacks for lifting, lowering, pushing or pulling. Attachment is available in a temporary and permanent model. The No. 4085 Duff attachment, a temporary model is designed for use with governor-controlled jacks; the No. 4086 is a permanent type, bolted to the jack. The Norton motor attachment No. 571-MA is used with self-lowering speed-controlled jacks. Complete details about both types are contained in Bulletin DN-447.

ACCURATE COUNTING SCALES

EXTREMELY
sensitive, Kron
counting scales,
announced by The
Yale & Towne
Mfg. Company,
Philadelphia Divn.,
Philadelphia 24,
Pa., are claimed to
assure swift and
accurate counting



of even the smallest and most lightweight parts. They are available in single-fixed, double-fixed, and triple-fixed ratio types, and can be supplied in the following standard counting ratios to meet specific requirements: 9:1, 49:1, 99:1 and 999:1; also 10; 50:1, 100:1 and 1000:1. These ratios can be supplied in any combination needed for the precise counting of parts of any size and weight or of any quantity. Scales are available in dormant platform, portable platform and bench types.

(Continued on page 120)

USE HEADED AND THREADED FASTENERS
FOR ECONOMY AND RELIABILITY

Alloy Steel BOLTS NUTS STUDS

Every standard alloy steel fabricated into bolts, nuts, studs and many special fastenings. Accurately made in standard dimensions or to meet your specifications.





BETTER BOLTS SINCE 1882

A full line in carbon steel, heat-treated alloy steels, stainless steel, silicon bronze, brass, bronze, and monel metal.

PAWTUCKET

MANUFACTURING COMPANY 327 Pine Street, Pawtucket, R. I.

THE PLACE TO SOLVE YOUR BOLT PROBLEMS

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He has never heard of anything so easy, so luxurious as the water systems that serve American farmers--built of steel pipe, steel pumps, steel tanks--which automatically bring plenty of clean, pure water for crops, livestock and all family needs.

Most of us can remember when even the American farmer's lot was little better than that of the Oriental peasant. That was before steel was plentiful--before manufacturers like Youngstown had devised efficient, economical methods to produce pipe, plates, sheets, bars, rods and wire for the fabrication of farm implements, tractors, trucks, automobiles, cribs, fencing, home equipment and the hundreds of other steel products that have freed the American farmer and his wife from much of their drudgery.

Without steel, America would revert to the primitive ways of our ancestors and of the world's "backward" countries. Fortunately, America has steel enough--steel to win the war now, and then to advance our civilization to new heights and guard it in lasting peace.



THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN, OHIO

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS
Pipe and Tubular Products Sheets - Plates - Conduit Bars - Electrolytic Tin Plate - Coke Tin Plate - Rods - Wire Nails - Tie Plates and Spikes - Alloy and Yoloy Steels.

MARCI



FIBRE COMBINATION DISC

and it's made to order for better metal working!

This disc is made possible by a new-type adhesive that gives a harder, longer-lasting bond. Armour's long experience in making abrasives insures satisfaction...gives all the qualities you need in a metal-working abrasive. . . .

- . CUTS CLEAN AND FAST
- . CUTS COOLER, CUTS MORE EASILY
- . HAS GREATER RESISTANCE TO HEAT AND HUMIDITY
- HOLDS UP BETTER UNDER HIGH CUTTING SPEEDS
- . IS MORE ECONOMICAL, LASTS LONGER
- PRODUCES FAR BETTER FINISHES

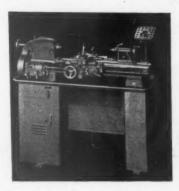
For practical abrasive advice, write or call . . .

ARMOUR SANDPAPER WORKS

DIVISION OF ARMOUR and COMPANY

1355 West 31st Street . Chicago 9, Illinois

NINE-INCH TOOLROOM LATHE



NEW nine-inch toolroom lathe for exacting toolroom or production operations is announced by the South Bend Lathe Works, South Bend, Ind. It has a 91/4" swing and takes 22" between centers. It has maximum collet capacity of 1/2" and 3/4" spindle bore. The twelve spindle speeds range from 41 to 1270 rpm, with back gear drive for the slower speeds. Quick change gear box permits cutting 48 pitches of screw threads, 4 to 224 per inch, and provides 48 power longitudinal feeds and power cross feeds.

SEEP-SEAL STOPS LEAKS IN CONCRETE MATERIAL prepared especially to stop water leaks through concrete announced by Rock-Tred Corp.,

62 W. Washington St., Chicago, Ill. It is sold under the trade name Seep-Seal. It is claimed that Seep-Seal mixed with cement can be inserted in cracks or holes in concrete while water is actually gushing through and that it will stop the leak in two minutes. It may also be used for damp proofing. Lierature available.

HEAVY DUTY MOWER



HEAVY duty, general purpose mower for highway, park, golf course, airport or miscellaneous service is announced by Allis Chalmers Mfg. Co., Milwaukee, Wis. It is mounted as a unit on a Model "B" Allis-Chalmers tractor, and has a variety of travel speeds for all occasions. It is said to possess unusual stability for operating on extreme slopes and difficult angles. Five-foot cutter bar is raised and lowered by power hydraulic lift.

(Continued on page 122)

EDWARD

Edward Gate Valves

The Edward Valve & Mar

Non-return



Non-Return Values Catalog 12-B

Cast and forged steel in 300 to 2500 lb sp classes. Full dimensions, cross-section illustrations and descriptions. Maintenance hints, pressure drop data, pressure-temperature tables and other useful information. Every power station operator should have this helpful new catalog.

Gate Values Catalog 12-E

Cast steel for service from 150 to 3600 lb. Description, with illustrations, of the new, basically different Edward gate valve line, including Intex integral seat construction, exclusive Edward guiding method, and other new features. An important catalog for steel gate valve users.

Blow-Off Values Catalog 12-D

Design details and dimensions for Edward cast and forged steel blow-off valves. Installation and operating suggestions. Moderate initial price, extremely low maintenance costs and operating dependability make Edward blow-off valves standard equipment for thousands of boiler plants.

The Edward East Chicago		Mfg. Co., In	nc.,	1330-144
Please send r Non-R Gate V	ne the for eturn Va Valves, Ca	llowing cata	12-B	ligation.
		Title		
Name		-	Title	
Company			Title	

EDWARD Steel VALVES @

MARCH,





SURFACE plates of black diamond granite, which are said to be harder than tool steel are announced by the State Manufacturing & Construction Co., Franklin, Ohio. They are known as the Velsey surface plates and are lapped in series to a tolerance of .00005" surface flatness. Plates cannot be warped or otherwise distorted by any conditions to which a surface plate is subjected, according to the manufacturer. Regular sizes are 12" x 19", 18" x 24", and 24" x 36°. Special sizes available.

V-H HOLDING FIXTURE



ZAGAR V-H (vertical horizontal) holding fixture is said to work just as well horizontally as vertically. It is said to be fool-proof, and of rugged construction. Angle plates are not needed. The body has two right-angled faces milled with key slots in two directions on each face, adapted to any position on a drill press or milling machine. Fixture is said to be ideal for drilling and tapping cross holes in round stock. Body is cast of Meehanite. Unit is machined to close tolerances. Tapped holes for mounting drill bushings. Zagar Tool & Mfg. Co., Cleveland, Ohio.

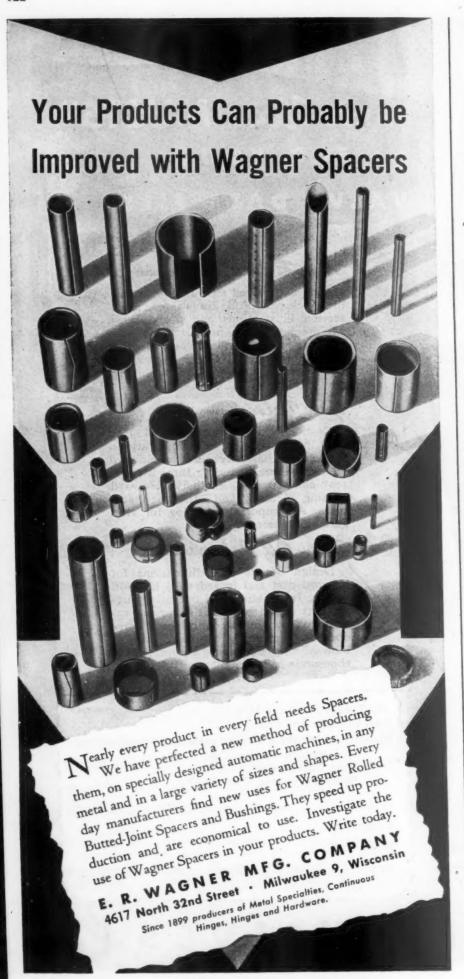
STEEL WALL DESKS

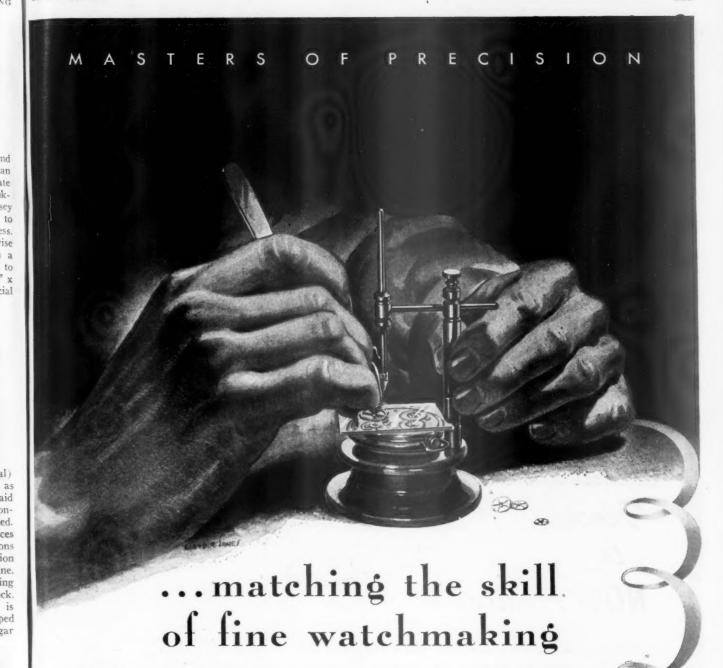


LYON Metal Products, Inc., Aurora, Ill., announce the availability of Lyon steel wall desks. Model illustrated is No. 2131-17. It is 245%" wide, 23½" deep and 13" high. Attachment bracket is 12" high. Desks have 245%" x 14" working surface, large storage compartment, and three open compartments across the back of the desk; pencil tray on either side and a grooved lock with two keys.

(Continued on page 124)

BR





Each step in producing Western brass or other copper base alloys requires the painstaking precision that is used in making timepieces of finest accuracy.

The temper you specify, the tolerances, the finish, will be supplied as ordered—in sheet, strip, long coils or stamped parts. Western mills at East Alton, Ill., and New Haven, Conn., produce that way.

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13" gh. ice, pen

sk; ved We have the facilities, the experience, the skill, and most important, the desire. Those four factors comprise a valuable combination. That combination is faithfully serving America at war, but the capacity of Western mills is such that we may be able to serve you, too, now or later. Specify Western on your next order for copper-alloy metals,

Western BRASS MILLS

Division of WESTERN CARTRIDGE COMPANY, East Alton, Ill.



BRASS . BRONZE . PHOSPHOR BRONZE . NICKEL SILVER . COPPER

MARG

GE FENC

AMERICA'S FIRST WIRE FENCE .



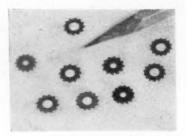
• PAGE, first to offer chain link fence of aluminum wire, now announces availability of this superior, long-lasting fence of heavy gauge wire to those who are entitled to proper priorities. Complete information, cost estimates on either aluminum or galvanized steel chain link fence, and priority assistance, can be had from the Page Fence Association member nearest you. If you do not know the name and address of this fence engineering and erecting firm, write or wire to the PAGE FENCE ASSOCIATION district office in Atlanta, Bridgeport, Chicago, Denver, Pittsburgh, New York or San Francisco, and your inquiry will receive immediate attention. PAGE FENCE ASSOCIATION, Headquarters: Monessen, Pennsylvania.

PLASTICS HEATING UNIT



THERMAX Red Head is the name of this compact high frequency heating unit developed for the plastics molding industry by the Girdler Corp., Louisville, Ky. It is an automatically controlled machine with output of 400 watts. It is 15" wide, 23" high and 29" deep. Ordinary 230 volt, 60 cycle single phase current is used. Closing preform door automatically turns on the high frequency power and timer. It will raise the temperature of 1/3 of a pound of average material 170° in one minute. At the end of prescribed time the red indicating light goes out.

COMMUTATOR SAWS



LINE of solid tungsten carbide commutator saws is announced by Super Tool Co., 21650 Hoover Rd., Detroit, Mich. These saws, ranging in sizes from 1/4" to 1" in diameter, can be supplied in thicknesses from .015" up and in hole sizes to meet specifications. Tungsten carbide provides exceptional clean cuts, long cutter life, and more efficient production according to the manufacturer. Use of carbide eliminates filing operation.

FASTENER FOR V-BELTS



THE "FLEX, V" fastener for A and B section V-belts has been developed by the Flexible Steel Lacing Co., 4607 Lexington St., Chicago 44, Ill. As shown in the illustration, the fastener consists of two V-shaped end plates to the belt ends. The separable hinge joint permits replacement of V-belts without dismantling line shafting or machinery. With no metal on the underside of the belt, Flex V fastened belts can also be run on a V-flat

"[1"

(Continued on page 128)

CAN YOU SOLVE THIS ONE?

How many trips must you make to ferry a fox, a head of cabbage and a sheep across a stream, one at a time, so that the fox is never alone with the sheep, or the sheep alone with the cabbage?







Thermoid's extensive manufacturing facilities, spearheaded by Thermoid's Engineering and Research Staffs, have solved countless problems in the application of industrial rubber products.

A great many of these problems, in widely diversified fields, are being solved within the broad scope of the Standard Thermoid Line*. These solutions have been effected by Thermoid representatives in all parts of the country who have had long experience in specifying the most efficient Thermoid Products for all types of installations.

This combination has been consistently successful and can point with pride to an outstanding record of results—where results meant either an improvement in the finished product or an improvement in production technique. If you are confronted with a problem involving the use or application of industrial rubber products why not talk it over with the Thermoid representative?

Solution to puzzle: Seven. Ferry sheep across. Return and terry cabbage across. Return with sheep. Leave sheep on original bank of stream and take fox across to other side. Return and take sheep across.

DON'T PUT IT OFF
TIL TOMORROW
Buy More War
Bonds Today!

Inermoid Rubber

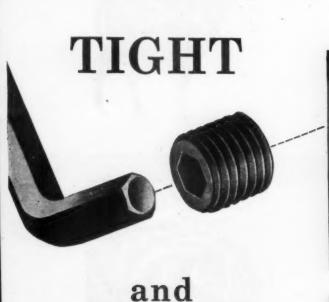
DIVISION OF THERMOID COMPANY

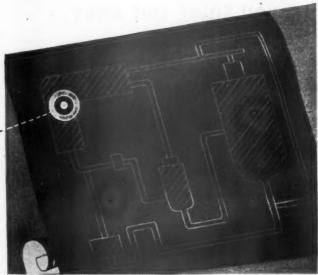
TRENTON, NEW JERSEY

"It's Good Business To Do Business With Thermoid"

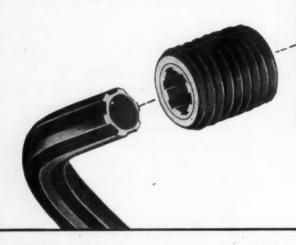
*THE THERMOID LINE INCLUDES: TRANSMISSION BELTING . F. H. P. AND MULTIPLE V-BELTS AND DRIVES . CONVEYOR BELTING . ELEVATOR BELTING . WRAPPED AND MOLDED HOSE . SHEET PACKINGS . INDUSTRIAL BRAKE LININGS AND FRICTION PRODUCTS . MOLDED HARD RUBBER AND PLASTIC PRODUCTS.

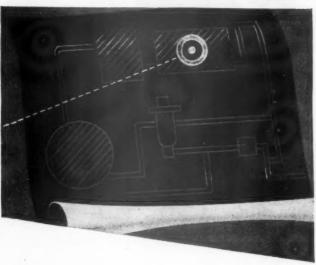
When you must choose between





TIGHTER





Only BRISTOL gives you both

For many socket set and cap screw applications, the Bristol Hex Socket Screws give you the strength you're after—more convenience and greater strength than with conventional hex screws.

Bristol has made socket screws for 32 years, and its manufacturing methods have been developed along precision lines.

Size of socket, fit of thread, fit of wrench in socket ...meet precision tolerances, because Bristol works to much closer tolerances. Bristol's other socket screw

—the "Multiple-Spline"—has to be made to extremely close tolerances—you get this bonus in the hex.

Strength is greater — particularly right under the head of cap screws — because Bristol's unique method of cold-upsetting and extruding high-grade alloy steel develops the proper elasticity plus surface hardness. Threads are also extruded for greater accuracy of lead and pitch (giving a Class III fit) and increased surface hardening. Cap screws are knurled for convenience in handling.

Bristol Hex Socket Screws are made in all sizes down to and including No. 4 wire. On the smaller sizes, Bristol often recommends its "Multiple-Spline".

ONLY BRISTOL
has improved the
Socket Design

For the smaller sizes, where there is danger of the socket wall breaking under wrench pressure... for applications where vibration will be encountered, requiring extra holding power in the fastener... for cases where the screw will be frequently removed and returned... Bristol alone can recommend a socket set or cap screw that's geared to the wrench.

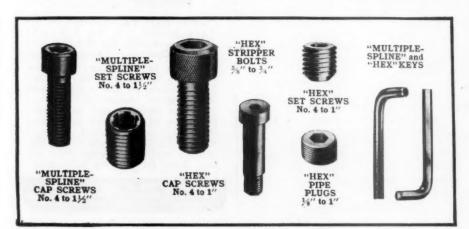
The exclusive design of the Bristo "Multiple-Spline" Socket speeds up assembly and provides a tighter fastening. Geared transmission of rotary turning power simplifies effort and prevents slippage. It can be turned far beyond the point where a hex would burst or at least round out — because the key pulls the screw around, without expanding pressure. Yet, for adjustments, a flick of the key will loosen it.

The Bristo "Multiple-Spline" Socket Screw is specified by leading aircraft and communications equipment manufacturers; is ideal for electrical appliances, cameras, motor assemblies, instruments, etc. The Bristol Company, Mill Supply Division, 132 Bristol Road, Waterbury 91, Connecticut.





has the right socket screw for every application



AT LAST a belt hook THAT'S FAST AND TRUE!



Now Bristol announces an improved method of fastening joints in transmission belts. It's a hinge-type wire fastener that can't go wrong.

A unique method of attaching the hooks to the spacer card saves time and insures a strong fastening which distributes pull evenly.

Ask your distributor for Bristol's "B LINE" TRANSMISSION BELT HOOKS. They will speed up the work and strengthen the joint.



See how the individual hooks are supported — each one passes through the spacer card at 6 points! When you cut off, the hooks stay in alignment — they can't flop around. No stiffener to slit, either, because the open end is protected by a V-shaped card that slips right out. You save steps — you save trouble.







Straubel TEXTURIZED TRADE MARK REG. U. S. PAT. OFF. Paper Products

O Paper Products

High Quality
Towels and Toilet Tissues
for Industrial Users

Texturized Towels
Three Leaf Towels
Texturized Roll Tissue
Convenience Cut Tissue
Alcove (Recess) Tissue
Three Leaf Interfold
Tissue
Two Leaf Interfold

Tissue Sof-Leaf Interfold Tissue

Conserve — Waste none War needs more paper now!

Straubel

CREEN BAY, WISCONSIN

OILITE EXPANDS CORED AND BAR LINE



NEW sizes of cored and solid bar stock in Oilite materials embrace a range of 3/8" to more than 12" in diameter, according to announcement by the Amplex Division, Chrysler Corp., 6501 Harper Ave., Detroit, Mich. Self-lubricating cored and solid bar units up to 95 lbs. in weight are now in production. New size list available on request.

STURDY BENCH MODEL POSITIONER

HAND - operated positioner announced by Ransome Machinery Co., Industrial Divn., Dunellen, N. J. is

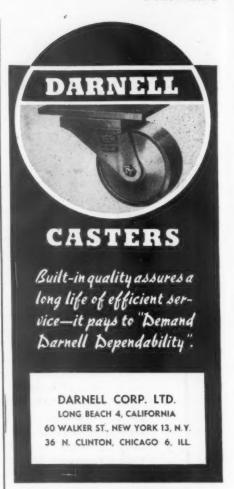
said to facilitate production and repair welding, assembly, overhauling, grinding, drilling, hard-surfacing and similar operations on all small work. It is known as the Model 1H. It has a tilting range of 150 dgrees, revolves 360 degrees and can be locked in position at any degree of tilt. The 16-inch table top is equipped with 9/16" slots. Swivel base is available.

PILLOW BLOCK



THE Dodge Mfg. Corp., Mishawaka, Ind., announces a new Dodge-Timken bearing known as Type "E" which is now available in both pillow blocks and flanged units. It is designed to give 30,-000 hours or more of service under conditions for which it is adapted as determined by use of standard selection tables. Method of fastening to shaft is simple and effective. Housings are compact and rugged and precision machined to close tolerances on automatic machines. Labyrinth seals prevent loss of lubricant and protect bearings. Bearings are completely assembled, lubricated and adjust-ed at the factory. They have enough selfalignment to compensate for any normal misalignment.

(Continued on page 130)





"Cold-Working" Process Makes This Steel 2½ to 5 Times Tougher—Stands the Bending that Makes Ordinary Shovels Break Advances in metallurgy have enabled us to improve the strongest light shovels on the market. With their famous "backbone" construction that thickens and strengthens all points of wear and stress, and their steel now "Surface Peened." RAZOR-BACK Shovels are even tougher and longer-lived than before. Send for Catalog and prices.

THE UNION FORK & HOE COMPANY 694 Hocking Street Columbus 15, Ohio Industrial Forks, Asphalt and Road Rakes



For Utmost Wiring Protection . . . Where Conditions Are Severe

G-E White high-quality Rigid Conduit with its hot-dipped zinc coating gives permanent protection to wiring helps to prevent electrical breakdowns. It is heavily zinc coated inside and outside by immersion in molten zinc — the hot-dipped galvanized method. It is the only conduit made which has a wiped zinc interior surface for easy wire pulling.

This method provides the most durable coating of pure zinc that can be applied by any process. In addition, G-E White has a coating of baked Glyptal inside and out. This conduit is resistant to heat, flame, cold, moisture, gas, alkalies and mechanical injury.

G-E White is easy to install. It has accurate threads. Its smooth interior surface aids wire pulling.

G-E BLACK RIGID CONDUIT

G-E Black Rigid Conduit has a tough enamel coating baked on. This coating provides a durable protection particularly for interior use and is recommended for use where exposed to chemical corrosion.

FOR FURTHER INFORMATION on G-E

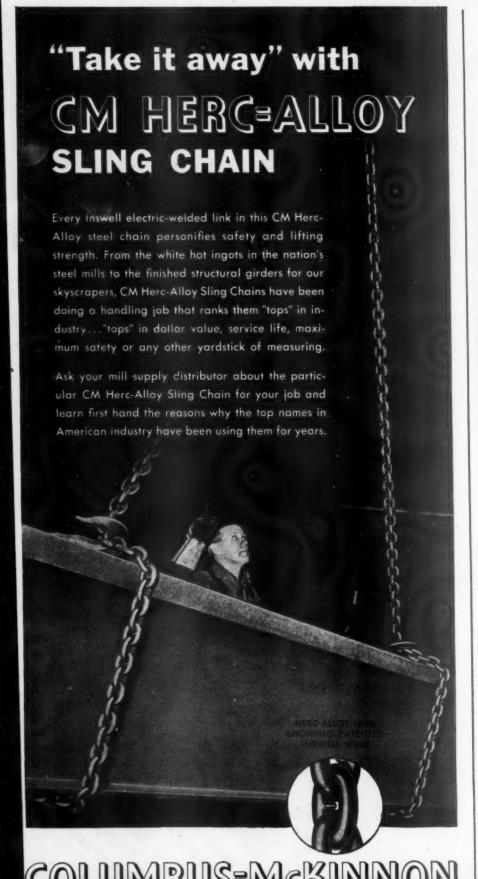
White or Black Rigid Conduit or on G-E Building Wires and Wiring Devices, see the nearest G-E Mer-chandise Distributor or write to Section CDW 357-77, Appliance and Merchandise Department, General Electric Company, Bridgeport, Conn.

riear the General Electric radio programs:
"The G-E All Girl
Orchestra" Sunday 10
P.M. EWT, NBC. "The
World Today" news
Monday through Friday 6:45 P.M. EWT,
CBS. Hear the General Elec-

BUY WAR BONDS AND KEEP THEM



GENERAL (%) ELECTRIC



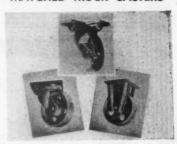
CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corporation)

GENERAL OFFICES AND FACTORIES: 136 Fremont Ave., TONAWANDA, N. Y.

SALES OFFICES: New York, Chicago and Cleveland

MATCHED TRUCK CASTERS



LINE of matched casters for heavy duty industrial service where loads are up to one ton per caster, is announced by Market Forge Co., Everett 49, Mass. All wearing parts are machined of high grade machinery steel. Radical departure is absence of a king pin. The large diameter ball bearing swivel serves as both a thrust and radial bearing. Caster is well protected against dust, dirt, water, etc., due to its design. All types of wheels rubber, Bakelite, steel, semi-steel and alu-minum are available. Casters are made of stainless steel, monel metal for corrosive conditions and plain steel as well. They are made in 4", 5", 6", 7", 8" and 10" diameter sizes.

IMPROVED WATER RESISTANT ADHESIVES FOUR newly improved water readhesives. sistant designed for overseas packaging of military parts, are

announced by Paisley Products, Inc., 1770 Canalport Ave., Chicago, Ill. Developed to meet water immersion tests of Army and Navy packaging specifications, they are currently being used by Army Depots, Arsenals, and War Plants whose packaging must conform to such typical specifications as JAN-A-101, C.W.S. No. 197-54-398, U.S.A. No. 100-14A, etc. In addition to being non-inflammable and permit fast sealing as they can be water diluted to spread freely and evenly without brush drag.

SHORTSTUB ELECTRODE HOLDER



"Shortstub" is the name of new electrode holder designed to increase the usable portion of the electrode to a point right up to the uncoated end of the rod, developed by the National Cylinder Gas Co., 205 Wacker Drive, Chicago, Ill. With the "Shortstub" only one-half inch is needed for a tight, efficient current contact in the holder jaw, it is claimed. An extension of the holder itself allows the now usable stub end of the rod to be projected into the proper position for weld-

(Continued on page 132)



The complete
New Britain Line
for Automotive,
Aircraft, General
Maintenance and
Production Needs
is sold by leading
Jobbers.

The stiff maintenance problems you have faced and handled so well in wartime have demonstrated the raw truth that a dependable, versatile Set of Hand Tools is not a mere luxury but a downright necessity. For, thousands of such Tool Kits have been priceless assets to maintenance men in countless plants charged with the vital responsibility of keeping America's production machinery going.

New Britain has always featured dependable and completely practical Mechanic's Tool Sets . . . such as No. 6151T shown here. Bought by many factories and mechanics, in peacetime, these and other superb New Britain Sets have been a tower of strength on the homefront in wartime. Plan now to have, in peacetime again, fine Tools like these in your cribs. Ask your local mill supply house about them today. The New Britain Machine Co., New Britain, Conn.





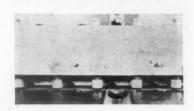
The Army-Navy "E" Pennant, with stars, flies over New Britain's plents, signofizing outstanding production of machine tools, alcording and applicables.

THE NEW BRITAIN MACHINE CO.] / .])

HANDIOOLS

MARCH





EVEN if the blade should drop unsuspectingly, operators of power shears will escape injury if they use a device announced by Goodyear Aircraft Corporation, Akron, Ohio. The device is a protective plate easily attached to the power shears and designed to permit fingers to be placed within a fraction of an inch of the blade with complete security. Guard is constructed of 1/8 sheet steel which hangs behind a holddown plate. Sheet is stationary while plate moves. To the 1/8" sheet are attached 1/16" thick skirts which enclose the parts of the hold-down plate coming in contact with the material sheared. Plate keeps operator's fingers away from the blade and the skirts keep digits free of the hold-down plate.

ACCURATELY MEASURES LIGHT TRANSMISSION N E W transmission photometer for measuring accurately the amount of light transmitted through very small

areas of spectrographic plates, is announced by Special Products Divn. of General Electric Co. The photometer is desirable for use wherever spectrographic analysis is employed, such as in the metal fields, and also for microcolorimetric and microchemical analyses and for measuring light transmission through solutions.

HYDRAULIC FOOT PUMP



TWO-speed foot pump for pressures up to 10,000 lbs. psi, is announced by Lyon-Raymond Corp., Green, N. Y. Pump has two pistons—one a high speed, low pressure piston, the other a small, slow speed, high pressure piston. Up to 1000 lbs. pressure both pistons pump oil, but at 1000 lbs. the high speed, low-pressure piston automatically cuts out and higher pressures (up to 10,000 lbs.) are easily developed by the small high pressure piston. Pump can be furnished with a base suitable for mounting or with an auxiliary base allowing it to be used on the floor with fastening—as illustrated.

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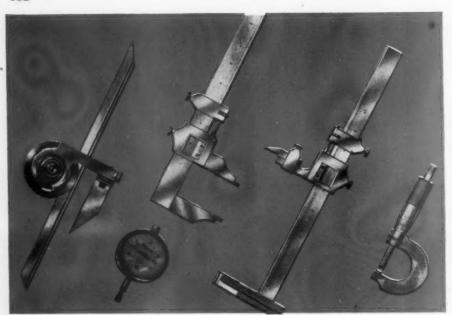
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(Continued on page 136)



STARRETT TOOLS

Measure Up to YOUR Own High Standards of Accuracy and Performance

You've probably been going through the same experience as most of us in the metal working industry. You've had to turn out products meeting extra high standards of precision and turn out more of them per day or per year than you ever dreamed you could.

In the face of an almost overwhelming demand for precision measuring tools to meet these extreme production demands, the accuracy and dependability of Starrett Tools have been steadfastly maintained.

The Starrett name on a Micrometer, a Vernier Gage, a Dial Indicator or any of hundreds of other precision measuring tools is and will continue to be worthy of your trust — a good thing to remember in the equally strenuous days to come.



THE L. S. STARRETT CO., ATHOL, MASSACHUSETTS, U. S. A.

World's Greatest Toolmakers

STARRETT

PRECISION TOOLS . DIAL INDICATORS . GROUND FLAT STOCK HACKSAWS . METAL CUTTING BANDSAWS . STEEL TAPES

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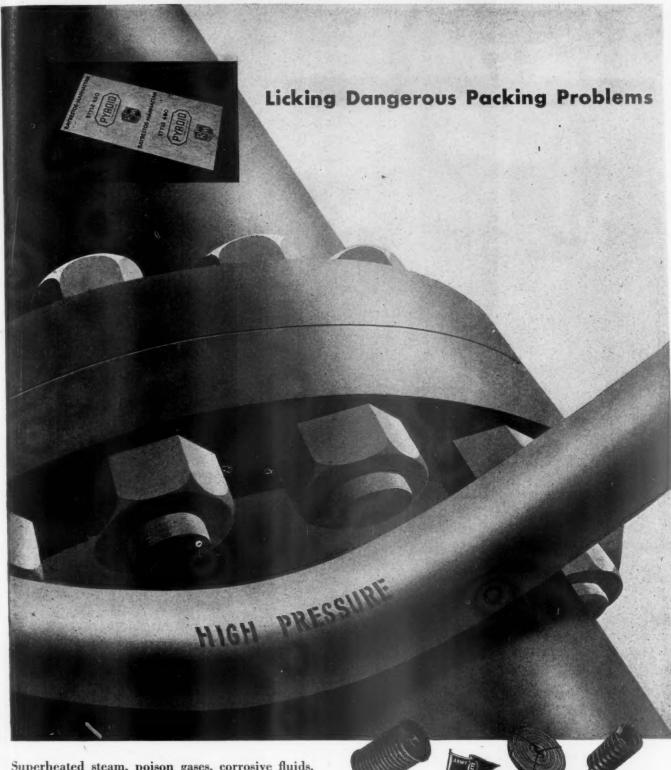
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Superheated steam, poison gases, corrosive fluids, acids, and other hazardous fluids hold no terrors for R/M packings.

R/M special packings handle the most dangerous installations with perfect safety.

Positive performance is guaranteed by the more than forty years of experience that R/M has had in all branches of the packing field.

You can get R/M packings now for your safety hazards or for those every-day jobs where you need good, reliable packing that lasts. More than seventy different types are available for every industrial use.

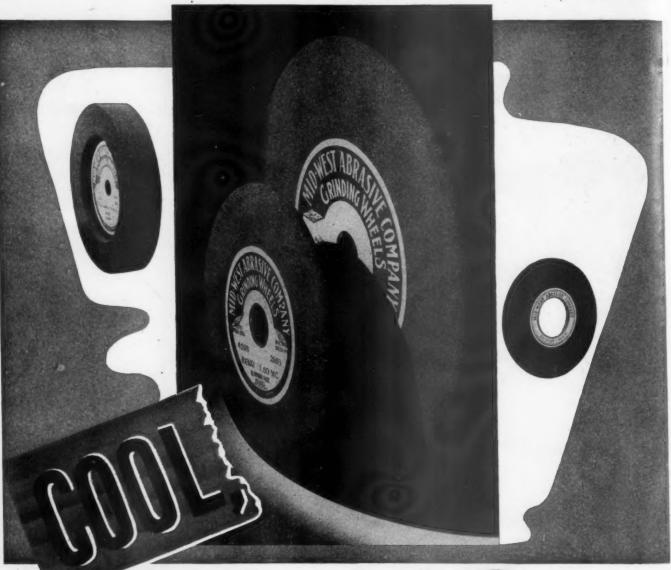
It's "Packed with Satisfaction"—When You Use R/M

INDUSTRIAL SALES DIVISION

RAYBESTOS-MANHATTAN

INCORPORATED

Manheim, Penna. • Bridgeport, Conn. North Charleston, S.C. • Passaic, N. J.



Swift and Sure!

A grinding wheel that cuts cool at high rates of speed, producing amazingly fine tolerances, is only one of the many outstanding products of the Mid-West Abrasive Company.

Engineered quality is built into each of the many items in the broad Mid-West line of classifications—honing and sharpening stones, sandpapers, rubbing bricks, abrasive specialties or wheel dressers.

Let one of the Mid-West staff of experienced field engineers survey your abrasive needs and recommend the items to meet them.

MID-WEST ABRASIVE CO.

Manufacturers of DEPENDABLE Abrasives

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Mid-West Abrasive Co. 1960 E. Milwaukee Ave., Detroit 11, Michigan

Please send me your complete data book on grinding wheels.

NAME______ADDRESS_____

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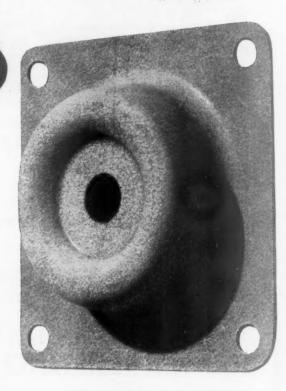
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Man's Genius for making things is limited only by the physical properties (of the substances used to make them.

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MR. ENGINEER ... here's a very special fulcrum seal

It was custom built for use in a tractor—to seal the opening through which the gear shift lever passes into the transmission case. Its job is to give positive protection so that no foreign material can invade the transmission. As with all Sirvis products, everything about it is special: it was specially designed from an engineer's specifications; special soft, flexible, high tensile leather was carefully chosen, tanned and treated in accordance with a Sirvis formula developed by Chicago Rawhide engineers; its manufacture was subject to rigid laboratory control; and the finished product is the result of 66 years' experience in processing leather to protect and seal vital machine parts. This seal delivers uniform and constant protection under toughest service conditions.

If mechanical protection is your problem, why not draw upon Chicago Rawhide's unparalleled reservoir of specialized engineering experience? If unusual precision, resilience, long service or resistance to pressure, shock or vibration is demanded in packings, washers, gaskets, couplings or valve discs... Chicago Rawhide research can develop the properties you require, and careful production control can assure the most exact processing. For precision performance in protective coverings and seals, specify Sirvis mechanical leather.

SIMIS

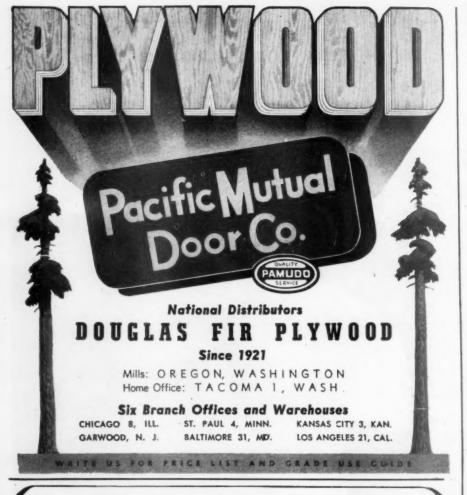
MECHANICAL LEATHER

A Product of

CHICAGO RAWHIDE MANUFACTURING CO.
1305 Elston Avenue Chicago 22, Illinois

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MARC



One OF THE PRODUCTS Jelliff MAKES is fine RESISTANCE WIRE



Carefully-controlled annealing is part of the

OTHER Jelliff PRODUCTS

WIRE MESH CLOTH: Woven in a wide variety of styles, sizes, metals and alloys.

DIPPING BASKETS: Sturdy, heavy-duty construction to meet all dipping-basket requirements. Engineering service on proper selection of metals and alloys.

FABRICATED PARTS: Strainers, filters and other parts fabricated from wire mesh. Complete operations from drawing and weaving to fabricating and assembly done in a Jelliff plant.

not plain steel, copper, or magnet wirebut special resistance wire as fine as 0008 in. dia., drawn by special Jelliff methods to insure uniformity and top quality.

ALLOYS FOR EVERY PURPOSE

ALLOY "A"-Nickel-chromium; nonmagnetic; spec. resistance 650 ohms/

ALLOY "C"—High resistance to oxidation and corrosion; for electronics and industrial equipment.

ALLOY "D"-Nominally 30% nickel, 15% chromium, balance iron. Specific resistance 600 ohms/CMF.

ALLOY "45"—Copper-nickel for winding precision resistors. Constant resistance over wide range of temperatures.

KANTHAL-Unavailable for duration; we will be pleased to supply data for your post-war requirements.

Write for our "Wire Data Book"

The C. O. Jelliff Mfg. Corp.

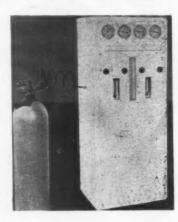


SOLVENT TYPE MOLD SPRAY

NEW. solvent-type mold spray for use in the foundry industry is announced by Hercules Pow der Co., Wilming-

ton, Del. It is made from a special resin and dissolved in a quick-burning solvent, and is applicable to the production of steel, iron, and nonferrous castings. Its name is Truline Mold Spray 91. It strengthens, hardens, and dries the mold surface in one operation. It can be applied with either a spray gun, can, or paint brush, and is then ignited and allowed to burn off the mold, leaving a thin film of resin thus guarding against loose sand falling into the drag during the process of setting the core and closing the mold Samples are being offered to the trade.

CHLORINE DIOXIDE GENERATOR



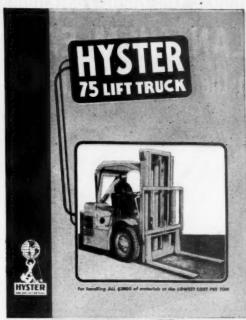
NEW model generator which produces dry chlorine dioxide gas from chlorine and dry sodium chlorite is announced by Mathieson Alkali Works, 60 E. 42nd St., New York, N. Y. Chlorite is contained in a reaction tower within the control unit, in contrast with earlier models which required separate chlorite towers. It is used commercially to generate chlorine dioxide, a gas with 21/2 times the oxidizing power of chlorine. Front and sides are removable. Unit measures 5' high, 2' wide, 18" deep.

DEAERATOR HALTS **EQUIPMENT** CORROSION COLD WATER deaerator designed to remove dissolved oxygen and carbon dioxide from process water at 40°

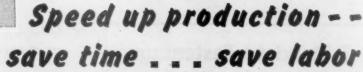
F, has been announced by Cochrane Corporation, Philadelphia 32, Pa. The equipment is arranged so that water is introduced into the vacuum chamber through a spray pipe from which it is discharged in fine particles over a column of staggered trays, which serve the purpose of distributing the water and breaking it into fine particles or films, permitting easy escape of gases. The non-condensible gases and a portion of the water vapor are withdrawn by means of vacuum-producing which may take the form of steam jet ejectors, or mechanically operated vacuum pumps. Literature available upon request.

(Continued on page 140)

GUIDES to MODERN MATERIALS HANDLING







HYSTER'S new catalogs are replete with the latest in materials handling, together with complete specifications of these modern trucks. They'll be helpful with your present and future plans. A request will bring you the catalogs desired.

Catalog: HYSTER 20 Fork Lift Truck · 2000 lb. capacity Catalog: HYSTER 75 Fork Lift Truck 7500 lb. capacity Catalog: HYSTER 150 Fork Lift Truck 15000 lb. capacity Catalog: HYSTER Karry Krane . . 10000 lb. capacity Catalog: HYSTER Straddle Truck . 30000 lb. capacity

» ALL gasoline powered; ALL pneumatic tire mounted «

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1878 North Adams Street PEORIA I, ILLINOIS

Pioneer manufacturers of mobile materials handling machines

BRANCH OFFICES: 221 N. LaSalle St., Chicago 1, Ill.; 90 West St., New York 6. N. Y.; 1022 Denrike Bldg., Washington 5, D. C.; 233 Ninth St., San Francisco 3, Calif.; Masonic Bldg., New Orleans 12, La.; 2219 Fourth Ave., Seattle 1, Wash.; 2700 Santa Fe Avenue, Los Angeles 11, Calif.; 215 Euclid Avenue. Cleveland 14. Ohio: 211 Farnsworth Bldg., Memphis 3, Tenn.



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for Production Efficiency



1 Phillips Recessed Head Screws—The modern, effective, time-saving fastening device proven in tens of thou-sands of assembly lines. Other standard head styles are also



2 Self-Tapping Machine Screws—Eliminate separate tapping operations for fastenings to castings, heavy gauge sheet metal, and plas-tics. Also available with Phillips Recessed Head.



Washer-Screw Assemblies — When use of lock washers is indicated, the timesaving of pre-assemblies is obvious. Also available in standard slotted head styles. The degree of perfection you will obtain on that vital fast assembly job may very well depend on the fastenings chosen for your product. That's why it is important to play safe by making your precise choice early in the design stage. Remember - no assembled product can be better than its fastenings.

Whether your need be a featured standard fastening or a part especially designed to meet your specific requirements-Scovill can help you. Our broad experience in fastenings and our demonstrated ability in special design make Scovill your logical choice.

The special purpose item featured above (in intermediate and finished stages) is one of many examples of our ingenuity in special design and cold-forging. Our special processing of this part, too, meant substantial savings in money-materials-motions.

Call our Fastenings Expert to help you choose - profit by Scovill skill in design and cold-forging. Call today.

SCOVILL MANUFACTURING COMPANY WATERVILLE Division

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DUREZ

PHENOLIC RESINS

MOLDING COMPOUNDS

INDUSTRIAL RESINS

OIL SOLUBLE RESINS

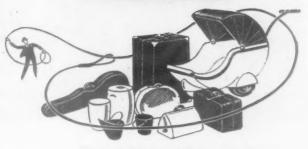
MOLDING COMPOUNDS



HOW TO GET A COOL GRIP ON A

Perhaps the handle on your family iron is molded of a Durez phenolic plastic. If so, there'll be no burned fingers from this handle because the heat resistant Durez phenolic does not conduct the heat of the iron. Also notice the smooth glossy finish. Feel the pleasing touch. These, too, are permanent features. Heat resistance is one of many outstanding properties of Durez phenolic molding compounds. Others are dielectric strength, diversity of finishes, excellent moldability, and resistance to moisture, temperature extremes, acids and alkalies. There are more than 300 Durez compounds contributing towards the furtherance of the war effort on a scope that is practically all-embracing. The unusual versatility which Durez phenolics are demonstrating today, reflects the wide usage of these compounds in manufacturing the many new items for postvictory markets.

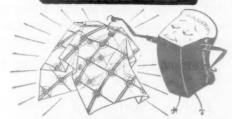
INDUSTRIAL RESINS



"ROPING" NEW MARKETS

Co-Ro-Lite—a combination of rope fibre and Durez phenolic resin—is an ingenious development of the Columbian Rope Company. This remarkable material offers two important advantages to the manufacturer. First is the high impact strength gained from the interlaced network of wiry rope fibres impregnated with tough Durez phenolic resin. Second is the speed and ease with which Co-Ro-Lite can be molded into compound curves. Wartime proven, Co-Ro-Lite promises to be the selection of many postwar manufacturers.

OIL SOLUBLE RESINS



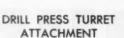
PARTY DRESS FOR DAILY WEAR

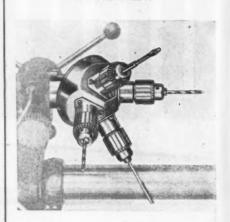
Durez 220, a new type phenolic resin, is now being used with amazing success in bread wrapper and similar type printing. This remarkable resin, added to ink, brings about the most instantaneous set under heat. One of the several outstanding Durez phenolic resins, 220 is another example of the continuing progress of Durez technicians in developing resins that are leaders in their respective fields.

Industrial America is devoting its tremendous strength to the war effort. At the same time, progressive manufacturers are looking ahead to the post-victory era when large-scale production will be necessary to insure a better way of life for all of us. It is only natural that these manufacturers look to plastics in their search for materials that will fulfill the requirements of their imaginative ideas for new and im-

proved products. The Durez organization has a great deal to offer on this score. As specialists during the past quarter century in the production of phenolics, Durez has developed these most versatile of all plastics to the highest degree. Add to this the extensive background which our technicians have acquired through active participation in the successful development of

many plastic products throughout all fields of industry—and you can appreciate the unusual value of their counsel. The benefits of the broad experience of Durez technicians and the wealth of data in our files are available to you at all times. Durez Plastics & Chemicals, Inc., 463 Walck Road, North Tonawanda, N. Y.





ATTACHMENT for drill presses that is said to increase the capacity of any drill press four times, is announced by the Chicago Drillet Corp. Name of attachment is Quadrill. It is a rotary device that holds four tools, any one of which is set in position by "the flick of a finger". Only the drill in working position rotates. Manufacturer claims it will do all the work of any drill press such as drilling, counter-boring, reaming. center-drilling, counter-sinking, spot facing, and other operations. Printed matter available.

RUGGED STEEL CLAMP FIXTURE

THE frame, slide and screw of new steel clamp fixture just announced by the Cincinnati Tool Co., 4090

Montgomery Road, Cincinnati 12, Ohio. are all of steel, which the manufacturer states give it longer life than fixtures made of grey iron or malleable iron castings. Slide is of heat treated steel. Clamping surface is 11/2" x 11/2". It fits 1/2" pipe in any length; slide will not slip on pipe under pressure. Clamp is described in Bulletin 622.

BORING BAR INSERT



MICROME-TER adjustable boring bar insert in which short pieces of scrap tool bits may be used as replacement cutters, has been announced by Nash-Zempel Tool Division of the J. M.

Nash Co., 2354 30 St., Milwaukee, Wis. It is said to be a simple matter to make a replacement cutter for this boring-bar insert-square up the cutter stock on any surface grinder to fit the square hot in the insert. The micrometer dial has twenty-five graduations, each being onethousandth of an inch. It is made in forty standard sizes and the manufacturers state that they will furnish inserts for any standard or special bars, and for bars which may be made in the user's own plant, in minimum time.

(Continued on page 144)



"Where've We Been All This Time, Jim?"

That's the eloquent report of these two dyed-in-the-wool operators of set-up wheels after they had thoroughly tried out the abrasive belt idea.

In place of the old time set-up wheel, a modern, resilient contact wheel was applied on the lathe.

From this a Metalite Cloth belt, built for this very purpose, was led to the pulley of the Idler Backstand, the lathe started up and these long-experienced mechanics achieved the following results on one belt:

> Removal of welds from forty (40) metal kit boxes 18" x 12" x 12".

> Finished surface on twelve hundred (1200) metal handles for grease guns.

This same work formerly required eighteen (18) set-ups.

Nine to one in favor of the Idler Backstand belt method, faster work and finer surfaces!

Any of our Field Engineers will be glad to discuss with you the various makes of such equipment as well as the type of abrasive belts for your specific jobs. Just a line to our nearest branch or to our home office. Behr-Manning. Troy, N. Y.

> Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Grand Rapids, High Point, Indianapolis, Los Angeles, New York, Philadelphia, St. Louis, San Francisco, Tacoma



BEHR-MANNING · TROY, N. Y.

(DIVISION OF NORTON COMPANY) RELIABLE COATED ABRASIVES SINCE 1872



"YOU'RE ON ... MISS CASEY!"

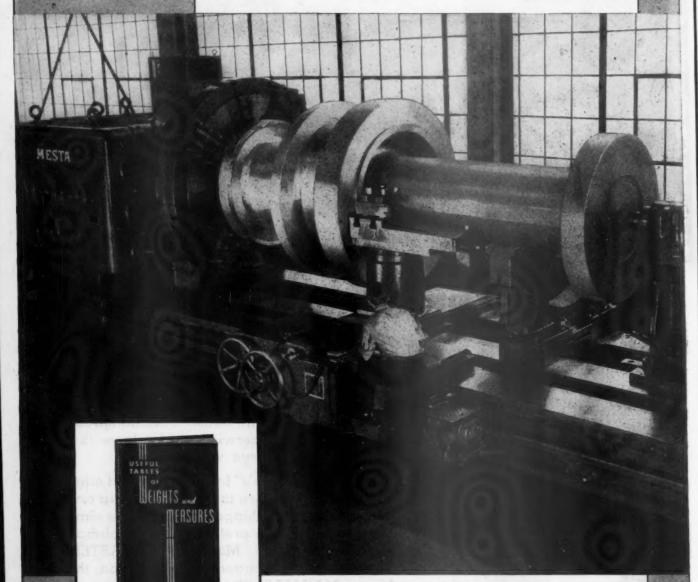


ith an enthusiastic, but not too dainty step, "Sarge" will strut his stuff on a crude South Pacific stage. Strictly G. I., the show will "bring down the house"... and spread broad grins on otherwise serious faces that daily see eye to eye with danger.

The "Sarge's" fetching wig and other theatrical necessities including makeup and scenic paints are shipped in containers similar to those which protect valuable aircraft instruments — the Mason MAILMASTER. Light in weight, rugged in construction, the Mason MAILMASTER is a favored container for overseas and domestic shipment.

The MASS.—175 STH. AVE., NEW YORK

MESTA Forgings



Send for your copy of this 64 page booklet containing valuable engineering data, ress your requests to Dept. A- 12

Turning a Massive Rotor Shaft Forged Complete from the Hot Ingot Poured in the Mesta Open Hearth Department



PA. MESTA MACHINE COMPANY PITTSBURGH,



K&M "Century." ASBESTOS CORRUGATED makes this a well built plant

Throughout the country, thousands of plants like this one have been getting years of satisfaction from "Century" Asbestos Corrugated and Flat Lumber. There must be good reason for this... in fact, there are six. Here are the special features of "Century" Asbestos Corrugated and Flat Lumber:

- 1. It is a tough material... being a combination of asbestos fibre and portland cement, produced under tremendous hydraulic pressure.
- 2. It has a pleasing, clean-cut appearance...
 needs no surface finish.
- 3. It is an amazingly adaptable material.
- 4. It is economical because it is maintenance free.

- 5. It is completely fire resistant.
- 6. It comes in 19 different lengths.

K&M "Century" Asbestos Lumber, in flat or corrugated form, is suited for plant additions and the

redesigning of existing buildings. You'll save time and money, and avoid risk, when you build with "Century." Let us help you with your particular problem, whether it is an immediate one or concerns future plans now on the drawing board.



KEASBEY & MATTISON

COMPANY · AMBLER · PENNSYLVANIA

MARCE



* TITAN METAL MANUFACTURING COMPANY now has some open capacity for heavy Brass Forgings (up to 100

Owing to the unusual demands for war materials, we have stepped up our forging capacity and are now manufacturing brass forgings, ranging from 1/4 oz. to 100 lbs. The accompanying illustrations show a 1/4 oz. TITAN brass forging and a 26 lb. TITAN brass forging.

Note: The only open capacity we have is for very heavy brass forgings.





METAL MANUFACTURING CO., BELLEFONTE, PA. NEW YORK . CHICAGO . SAN FRANCISCO

Quality Alloys By Brass Specialists Brass and Bronze Red . Forgings . Die Castings . Welding Rods

CLEANING SPRAY GUN



PRESSURE feed spray gun especially designed for industrial degreasing and cleaning operations on castings, forgings, sheet metal, etc., is announced by the DeVilbiss Co., Toledo 1, Ohio. Operated from a pressure feed tank the gun handles all kinds of commercial solvents and cleaners, producing a heavy, driving but well atomized spray. The gun has a two-finger, easy to pull trigger. When the trigger is pulled only part way back, air alone is emitted from the nozzle, permitting the gun to be used for dusting and drving.

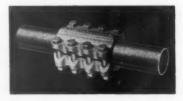
ALUMINUM LINDSAY STRUCTURE



FIFTY to 60% weight saving over light steel structure is offered by Lindsay structure in aluminum, which is said to possess the same unique strength weight ratio and ease of

assembly, according to Lindsay & Lindsay, 222 W. Adams St., Chicago. Manufactured by 61 ST alloy, Structure with panel sheets of .020" or .025" thickness are said to possess adequate rigidity for wide variety of uses such as cabinets, machine housings, refrigerator units, etc. Truck and trailer bodies using sheets .030" are also being made.

ALUMINUM POWER CONNECTOR

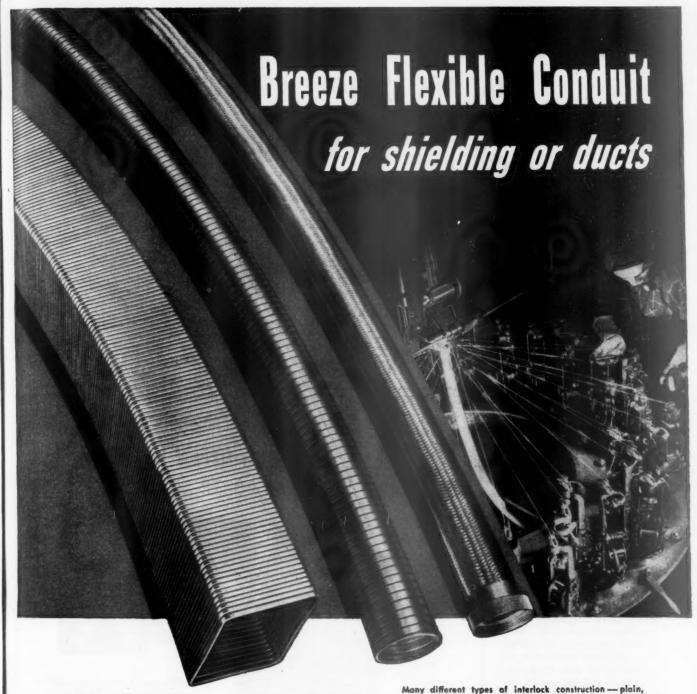


LINE of aluminum connectors for all power needs, featuring a full range of types and sizes for all aluminum-toaluminum connections as well as for aluminum to copper, is announced by the Burndy Engineering Co., 107 Bruckner Blvd., New York, N. Y. They differ from conventional copper connectors. The design compensates for the differencs in the electrical and physical properties of the two metals; and the high elongation of the aluminum alloy permits the connector to conform tightly to the conductor under pressure without danger of cracking.

(Continued on page 148)

Br a wi ducti tions meta exter

circu M Tub



Breeze Flexible Tubing, manufactured in many diameters from a wide variety of metals, is used as ventilation and exhaust ducting in industrial, aircraft, marine and automotive applications. The same basic tubing, with the addition of a braided metal covering, becomes light-weight shielding conduit, used extensively for shielding ignition systems and any electrical circuit to insure dependable radio communication.

Manufactured from a continuous strip of metal, Breeze Flexible Tubing and Conduit can be furnished cut to length, with necessary end-fittings for any conduit installation.



THE WAR

packed, and soldered—are available to meet varying use

requirements. A few of these are illustrated below.

Newark, New Jersey

MA

REDUCE POWER LOSSES WITH PRESSURE PROOF JOINTS THAT ARE AS TIGHT AS A WELD

GRUV-SEAL "Forged-Iron" Ring Gasket



THESE GASKETS used at all flange connections, valve bonnet joints, and at joints where ready disassembly is a necessary requirement, reduce power losses and shut-down time for

With Gray-Seel "Forged-Iron" Ring

With Gruv-Seal "Forged-Iron" Ring Gaskets, wrench pressure molds a tight seal that stays tight.

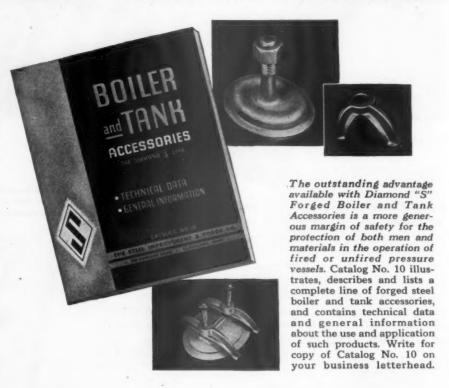
.These gaskets are manufactured by a special forging method which eliminates metal porosity and interlocks the metal fiber lines into a dense, tough structure such as is obtained by no other fabricating process. Gruv-Seal "Forged-Iron" Ring Gaskets are exact in every detail; true in diameter, circumference, and in thickness; perfectly proportioned and machined to a fine, smooth finish. The metal from which these are forged possesses corrosion-resisting properties beyond those of ordinary steels. Gruv-Seal "Forged-Iron" Ring Gaskets are made in a wide range of sizes, including all standard A.P.I. sizes. New sizes are constantly being worked out as requirements occur. Write for special bulletin on Gruv-Seal "Forged-Iron" Ring Gaskets.

These gaskets are one item of the complete line of Diamond "S" Forged Boiler and Tank Accessories which includes manhole cover assemblies, handhole cover assemblies, welding street ells, welding fittings, special flanges, water column ells, welding necks, all of which are forged to close tolerances from suitable metals, and fully meet and exceed A.S.M.E. requirements for steel use in pressure vessel parts.

THE STEEL IMPROVEMENT & FORGE CO.

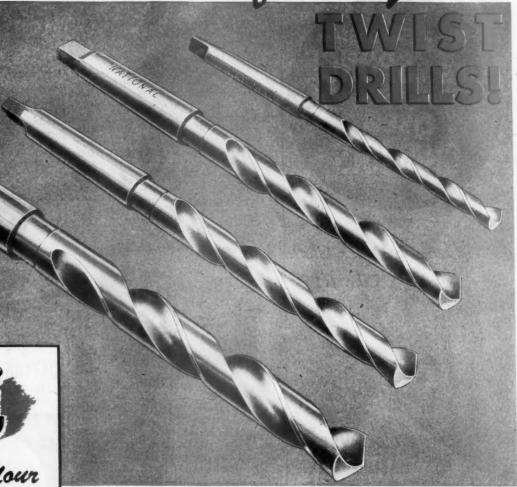
943 E. 64th Street · Cleveland, Ohio

The Improvement of Metals by Forging is exemplified by DIAMOND "S" FORGED BOILER & TANK ACCESSORIES





Get the Most from Your





Leading distributors in every section of the country have complete stocks of National Cutting Tools. Call your Mill Supply Distributor for National Cutting Tools or any staple industrial product. You get maximum value from your twist drills if you treat them right. Periodic resharpening, proper grinding, careful selection of feeds and speeds, and use of correct coolants are important factors. In addition, adjustments of the rake angle of the cutting lips to secure proper chip formation eliminates a major cause of drill fractures.

To secure maximum production and longer tool life in your drilling operations, specify the correct National Twist Drill for each job.

NATIONAL



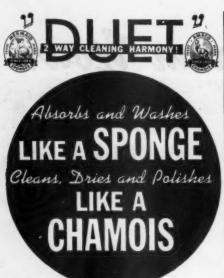
TWIST DRILLS
REAMERS, HOBS
MILLING CUTTERS
COUNTERBORES

TWIST DRILL AND TOOL COMPANY

DETROIT AND ROCHESTER, MICHIGAN

Imp and Die Division - Winter Brothers Co. Wrentham, Mass.

Festery Branches C New York C Chicago Claveland C Sen Francisco C Distributors in Francisco Cities





"Duet" can be used wherever a Sponge is used because of the amazing amount of water it holds. When wrung out tightly it can be used like a Chamois, for cleaning, drying and polishing. There is no other cloth even similar to "Duet". IT CANNOT UNRAVEL. A hidden stitch locks each and every thread through a secret process. The result is a dense surface that is extremely long wearing.

Ideal for heavy duty in industry. It is a great labor saver and consequently a money saver as well!

ANOTHER PRODUCT OF

AMERICAN SPONGE & CHAMOIS CO., Inc.
47 ANN STREET, NEW YORK 7.

245 MISSION STREET, SAN FRANCISCO 5

Producers of

AMSCO CHAMOIS and MERMAID SPONGES
EST. 1869 DEMAND BY BRAND

National Distributors



Cellulose Spanges

RAM TYPE 200-TON MOLDING PRESS

"MOVING - UP" ram type 200-ton molding press with floating center platen has been added to the regu-

lar line of machines manufactured by the Watson-Stillman Co., Roselle, N. H. Transfer molding attachments and hydraulic bottom strippers are useful features. It has an operating pressure of 2500 lbs. per sq. in. The platen area is 30" x 24½". Capacity of cylinders is as follows: top transfer cylinder, 20 tons; two pullback cylinders, 24 tons; bottom stripper cylinders, 12 tons. This press, known as No. 9253, occupies a floor space of 3' x 4', and has an overall height of 13' 3" with a weight of approximately 12, 800 lbs.

ELECTRONIC HEATER



FIFTY-KW electronic for surface and localized hardening of gears, rods and other parts and for annealing, brazing and soldering operations, is announced by the Industrial Heating Division of the General Electric Co. Ideal for metal-working plants, the new heater incorporates all of the important features of the 5-kw and 15-kw GE heaters, and in addition is capable of heat-treating much larger parts or the same size parts in less time. It is readily applicable for varied heating jobs merely by changing the induction-coil fixture. It is available in models rated either 230 or 460 volts, 3 phase, 60 cycles.

500 TON FLANGING (JOGGLING) PRESS NEW 500 - ton flanging (joggling) press of the gap type has been annoucned by the Watson - Stillman

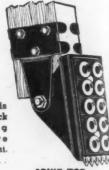
Co., Roselle, N. J. Press has a frame of welded steel construction to enable it to handle heavy plate work. Press has dual delivery pump high and low pressure driven by a 20 HP motor and has a capacity of 103 gpm. at low pressure and 14.7 gpm. at high pressure. It has operating pressure up to 2900 lbs. psi. Vertical or main ram has a capacity of 500 tons; horizontal ram has a capacity of 250 tons. This hydraulic press is 14' 6½" high; requires floor space of 5' 6" x 10' 10". Weight approximately 80,000 lbs.

(Continued on page 150)

SAFETY LADDER SHOES

FIT ANY STANDARD LADDER RAILS

Shoe or base is made of #16 gauge and the side plates are of #13 gauge steel. Suction grip threads are renewable. Lock nuts and spring washers insure proper adjustment. Easty to install.

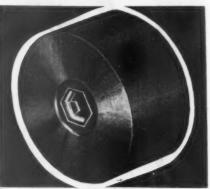


SPIKE TOE
IN POSITION

RUBBER
TREAD
IN
POSITION

"Listed by Underwriters' Laboratories Inc."
WRITE FOR BULLETIN NO. 4 TODAY

DAYTON SAFETY LADDER CO. 2337 Gilbert Ave., Cincinnati 6, Ohio



TUNGSTEN-CARBIDE Special Shaped

DIES

No need to worry about facilities for fast and reliable production of special-shaped dies — that's the specialty of the Hartley Wire Die Company. Skilled workmen, combined with extreme

Skilled workmen, combined with extreme manufacturing care and most critical inspection, assure you dies of the high quality you require, and the prompt service you desire.

you require, and the prompt service you desire.

"From blueprint to finished product"—that's Hartley service. Just send us the prints of the dies you require; no problem is too tough, no job too large or small. Every assistance we can give is yours.

HARTLEY

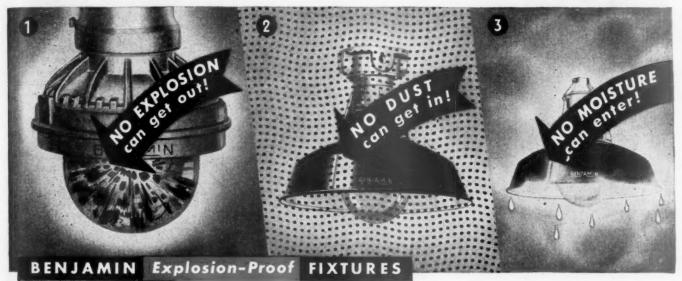
WIRE

DIE CO.

O ELM STREET

THOMASTON, CONN.

Important Facts you should Know about Benjamin Explosion-Proof, Dust-Tight and Vapor-Tight Lighting Equipment





Constructed to: Confine Explosions Within Fixture.

Contine Explosions Within Fixture.

These units meet the severe spark plug test in which spark plugs are used to create ignition of explosive mixtures within the fixture 30 or more times. Tested also to withstand hydrostatic pressures ranging to 380 lbs. per sq. in. For Class C (Ethyl-Ether atmospheres) a series of 50 additional explosion tests are met. Benjamin units are neither destroyed nor damaged by such tests nor do they permit the passage of flames or dangerously hot gases to escape to the surrounding atmosphere. Further, they pass all tests for operation at safe temperatures below the ignition temperature of the explosive atmosphere.

of the explosive atmosphere.

Uses: Listed by Underwriters' Laboratories for Class I, Group C and D hazardous locations, which include locations where flammable volatile liquids, highly flammable gases, mixtures or other highly flammable substances are used, handled or stored in other than their original containers.

BENJAMIN

Dust-Tight

FIXTURES



Prevent Penetration of Explosive Dust to Lamp and Operate at Safe Temperatures.

Lamp and Operate at Safe Temperatures.

Tests passed by these Benjamin fixtures include: Dust-Tight Test, 6 cycles of on and off operation at maximum room temperatures in a whirlwind of explosive dust-air atmospheres; Temperature Test, safe operation of fixture when covered with a heavy blanket of ignitable dust; a 35-hour, 2000 r.p.m. Vibration Test.

Uses: Listed by Underwriters' Laboratories for Class II, Groups E, F, G, and Classes III and IV hazardous locations. Includes such locations where the air may become laden with combestible dusts or where easily ignitable fibers are present. Also where dusts may settle upon ordinary fixtures in excessive quantities,

BENJAMIN

Vapor-Tight

FIXTURES



Exclude Harmful Amounts of Vapor, Gas, Water and Dusts from Interior of Fixture.

These fixtures are highly resistant to penetration of moisture and non-flammable dusts, gases, or vapors. They meet Benjamin's high standards for perform-ance and their dependability is attested to by their

ance and their dependantly is attested to by their years of service throughout industry.

Uses: Listed by Underwriters' Laboratories for Class II. Group G and Classes III and IV hazardous locations. Includes locations where non-fammable gases or vapors are present or where non-combustible dusts

Severe Tests and Years of Service demonstrate Dependability of these Special Benjamin Fixtures

Illustrated here are the three groups of Benjamin fixtures for use in hazardous locations. Fixtures in each group must pass stringent tests for conditions far beyond those found in actual service. Some of these tests are given in the chart at left, together with typical applications for each

Benjamin's years of experience in the manufacture and installation of such fixtures give assurance of maximum protection against fires, explosions and lighting interruptions due to hazardous or other abnormal atmospheric conditions. In the solution of special lighting problems involving the use of such equipment, Benjamin's experience and engineering recommendations are available without cost or obligation. Write for Free Data Bulletins containing detailed information concern-ing all of Benjamin Hazardous Location Lighting Equipment bearing the label of the Underwriters' Laboratories. Address Benjamin Electric Mfg. Co., Dept. Y, Des Plaines, Illinois.

HAZARDOUS LOCATION Lighting Equipment

DISTRIBUTED EXCLUSIVELY THROUGH ELECTRICAL WHOLESALERS

MAR





WESTINGHOUSE VIBROGRAPH



WESTINGHOUSE has aimed squarely at the requirement for a quick simple means of recording vibrations on the spot, and the result is a "little black box" called the Vibrograph. It weighs less than 9 lbs. and requires no power connection. It writes a permanent record of vibrations over the range of 600 to 15,000 cycles per minutes and amplitudes as low as one ten thousandth of an inch or as great as 1/16th inch. It achieves mechanical amplifications of about eight, using the same principle for recording earthquakes.

SOAPLESS SOAP **CLEANS** QUICKLY

LIQUID cleaner called QXL, a "soapless" soap, has been developed by Technical Development Laboratories,

Tenafly, N. J. Manufacturer says it is instantly soluble in the hardest water and even in salt water. Its action is accomplished by first softening the water, then by the three-step process of wetting out, emulsification, and dispersion, which occur simultaneously. It is also characterized, as an all-purpose cleaner which may be used on floors, fabrics, aircraft, boats, automobiles, cooking utensils and containers. It is said to be non-toxic.

BARNES ROTARY PUMP



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LOW pressure, rotary pump said to afford an efficient and economical method for pumping all types of liquids having lubricating qualities, is announced by John S. Barnes Corp., Rockford, Ill. It is adapted for use as a lubricating booster pump for oil lines, a gasoline dispensing pump, and for oil pressure systems on automotive, truck, or tractor equipment. Suited for Torque Converters. Capacity ranges from one gallon per minute at 600 rpm to 4 gallons per minute at 2400 rpm. Pump has high volumetric efficiency pumping extremely low viscosity fluids. It is self priming.

(Continued on page 152)

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ANGLE BRACKET AND SPEED NUT COMBINED

If your product requires brackets for assembly, why not use brackets with self-locking nuts built right in them? Why fumble around with separate lock washers and threaded nuts and use a wrench besides to keep them from turning? Why handle 9 parts (bracket, 2 screws, 2 lock washers, 2 nuts, screw driver, and wrench), when 4 parts will do a better job? (SPEED NUT, 2 screws, and screw driver.) Think of the savings in manhours and material this could mean in your plant!

These SPEED NUTS lock with a firm spring tension

that permanently prevents vibration loosening. They reduce weight, speed up assembly, and strengthen the structure. And since they are produced on high speed automatic machines, these self-locking brackets are not expensive.

Hundreds of manufacturers have improved both their

products and assembly methods by changing over to Tinnerman angle brackets. Write for samples.

TINNERMAN PRODUCTS, INC.

2050 Fulton Road, Cleveland 13, Ohio

In Canada: Wallace Barnes Co., Ltd., Hamilton, Ontario In England: Simmonds Aérocessories, Ltd., London





THE BASIC PRINCIPLE
of Spring-Tension Lock is
Embodied in all Speed Nut Designs

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o afethod aving John It is oster nsing s on

nent. acity t 600 rpm. ump-It is Stanley Steel Strapping Delivers the Goods Safely



Ready for Shipment with

SAFETY BELTS OF STEEL

Ready for any destination, these heavy-weight reels of insulated wire have every possibility of arriving in fine shape-snugly and safely banded with Stanley Steel Strapping.

Stanley Steel Strapping methods have given a new, streamlined lightness to containers and wrappings a new speed and economy to shipping departments-and an added assurance that shipments will arrive undamaged at their destinations. And what this system has done for other shippers, it can also do for you.

Whether you ship by reel, bale. case, crate or carton - investigate these modern weight, bulk and timesaving methods. Sturdy steel strapping and all necessary tools, seals and accessories for quick and dependable application are qualitymade by Stanley. The Stanley Works, Steel Strapping Division, New Britain, Connecticut.

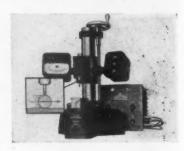


STANLEY

STEEL STRAPPING AND CAR BANDING SYSTEMS

MEET ALL FEDERAL STRAPPING SPECIFICATIONS

ELECTRONIC GAGE



ELECTRONIC gage which does not depend upon "make and break" electric circuit, Wheatstone bridge or a magnet field, and which is extremely sensitive and fast, is announced by Federal Products Corp., 1144 Eddy St., Providence, R. I. It is featured by one-pass inspection, workpiece being passed directly under contact. No stopping and no backstop required, resulting in 30 to 60% faster, accurate inspection. Contact pressure adjustable from 2 to 16 oz. Four magnifications enable readings from 10 microinch to .003". Gage illustrated is a comparator Model 130. Same electronic principle applies to hole and snapgages and other types of special gages which are now in production and will be available in near future.

ALUMINUM MALLET & HAMMER **FACES**

EMPIRE mallets and Basa replaceable face hammers are now available with aluminum heads and faces,

according to Greene, Tweed & Co., New York 66, N. Y. Aluminum parts are readily machined for refacing. Manufacturer states that alloy does not chip

TAPS THREE HOLES



ILLUSTRATION shows Tapmaster three spindle automatic machine which is capable of simultaneosuly tapping three identical or different size holes up to 1 inch in diameter. Each spindle has separate motor drive and controls. Lead screw principle is employed and safety features minimize work spoilage or tap breakage. Lead is held to tolerance of .0005 inch and holes up to 1½" long can be tapped with pitch range up to 8. Coolant system provides controllable flow of oil to each tap. Coolant flows only during down stroke of tap. D. H. Prutton Machinery & Tool Co., Cleveland, O.

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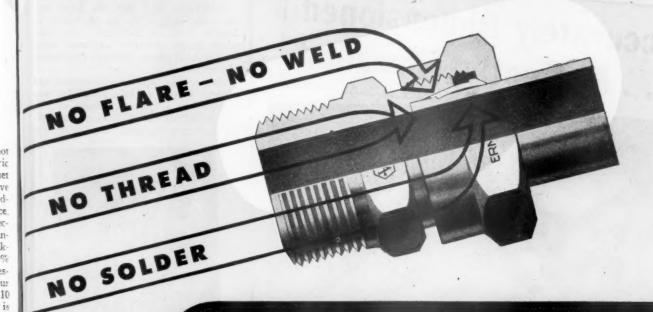
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An Introduction to the Improved New Emmelo Fitting!

This new, thoroughly tested and improved fitting makes it possible to connect metal tubes quickly and effectively. It is available in all sizes and types and can be furnished in O.D. tube or nominal pipe sizes from ½ inch to 2 inch O.D. Ermeto fittings for special installations are also available for a wide variety of uses. If your work involves installations on hydraulic, oil, water, gas or fuel lines, write or

phone any Weatherhead office for descriptive literature about the remarkably improved Ermeto fittings.



Write today for this new Ermeto catalog. It's free! Look Ahead with

Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND 8, OHIO Branch Offices: New York, Philadelphia, Detroit, Chicago, St. Louis, Los Angeles

MARCH

Accurately Dimensioned . . . Perfectly Threaded



If you haven't sold yourself on the merits of "Chicago" Standard Screw Products, you owe it to your company to make exacting tests and comparisons.

Take one each of the 15 different Chicago Screw Stock Products... Spread them out in front of you, and examine them carefully one by one.

Check with a micrometer or thread gauge. Put under a microscope or magnifying glass. Pull down screws with a tension indicating wrench.

You'll find "Chicago" Standard Screw Products compact and tough ... accurately dimensioned... perfectly threaded. By any and every test or comparison—they are unsurpassed for the needs for which they are made.

These Gine Products are sold only thru Authorized Distributors

CHICAGO STANDARD
SCREW PRODUCTS
all of one quality—the finest

CHICAGO Safety Plus line includes:

Socket Head Cap Screws
Socket Set Screws
Stripper Bolts
Square Head Dog Point Set
Screws
Pipe Plugs
Keys for Safety Plus
Products

Complete line includes: Hexagon Head Cap Screws

Square Head Cup Point Set Screws Headless Set Screws Fillister Head Cap Screws Flat Head Cap Screws Taper Pins Milled Studs Semi-Finished Hexagon Nuts Semi-Finished Hexagon

Castellated Nuts

THE CHICAGO SCREW CO.

ESTABLISHED 1872

1026 SO. HOMAN AVENUE CHICAGO 24, ILL.

CAST PLASTIC HANDLES IN OLD FLUORESCENT TUBES

Fluorescent light tubes are today seeing double-duty service at The Glenn L. Martin Company, Baltimore, Maryland, where burned-out tubes are now being used to mold plastic rods for a multitude of purposes.

Like so many other novel wartime and material savers, the tube mold idea was suggested by a Martin employee—in this instance, Plastics Methods Engineer Melvin Young, who found the demand for



Fluorescent Tubes serve as molds for casting plastic rods

plastic rods to be used as tool handles, stiffeners, etc., far in excess of the equipment available to mold them, but refused to let it bottleneck production.

In practice, one end of the burned-out tube is cut-off and the tube itself is filled with a liquid Catabond or Catavar thermosetting resin, then placed in an oven for curing. The cured plastic, still in the tube, is removed from the oven and the glass broken and chipped off, leaving a perfect rod which requires a minimum of polishing and can be cut to various lengths depending on the use to which it will be put.

Since the burned-out tube had no salvage value originally, the destruction of the mold is of no consequence; and in a large factory such as the Martin plant the supply of "molds" is practically inexhaustible

NEW MERCURY ARC CONVERTER FOR INDUCTION HEATING

Development of a new mercury are converter which fills out the low frequency range of electronic equipment required in the growing field of induction heating applications was announced by S. R. Durand, of the Allis-Chalmers Mfg. Company, at the Induction and Dielectric Heating Conference recently held in Chicago.

Designed for the purpose of electronically changing power at commercial frequencies of 60 or 25 cycles into 1000 to 2000 cycle power, the mercury arc type of frequency changer, Durand revealed, is particularly suitable for supplying power for forging, melting, and metal

(Continued on page 158)

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RGED FOR ENDURANCE



There is no Substitute for Quality

Wherever flanges are used, the extra measure of safety and endurance that protects pressure piping systems against costly breakdowns is Controlled Quality.

Ladish flanges are produced under exact-

ing metallurgical control and each bears the sym- WELDADBLITY bol of Controlled Quality identification ... the Ladish Heat Code.



TO MARK PROGRESS

GRAIN FLOW CONTROLLED FOR

CORRECT RADIUS AT HUB FOR

PROPER BOLT SEATING

HEAT CODE

FULL THICKNESS FACE PREVENTS

ACCURATELY SPOT FACED FOR

STEEL IDENTIFIED BY INDIVIDUAL

MAXIMUM STRENGTH

C GREATER SAFETY

DISTORTION

FITTINGS DIVISION

CUDAHY . WISCONSIN

MILWAUKEE SUBURB

District Offices: Lincoln Bldg., New York City . Rockefeller Bldg., Cleveland . Peoples Gas Bldg., Pittsburgh . Sterling Bldg., Houston . Petroleum Bldg., Los Angeles .

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FOR ELECTRICAL WORK—Mystik Tape protects wire against wear and abrasion, holds wiring in place, repairs cable, conduit, etc. Waterproof, long-wearing.



TO PROTECT FINE SURFACES—Mystik protects plastic noses of planes during shipment, likewise, can protect any fine surface against abrasion, dust and dirt during fabrication or shipment.



TO MASK FOR ELECTROPLATING— Mystik is used as a mask or shield in electroplating, engraving, embossing, spraying, sandblasting. It is tough, highly resistent to ocids. Won't mar any surface. This carton of radar equipment is headed for the South Pacific. There one of its greatest enemies will be fungus—which can attack and ruin it. That's why it is being sealed with MYSTIK Self-Stik CLOTH

TAPE—the pressure-sensitive tape that is fungicide-treated!

Every component of MYSTIK—its

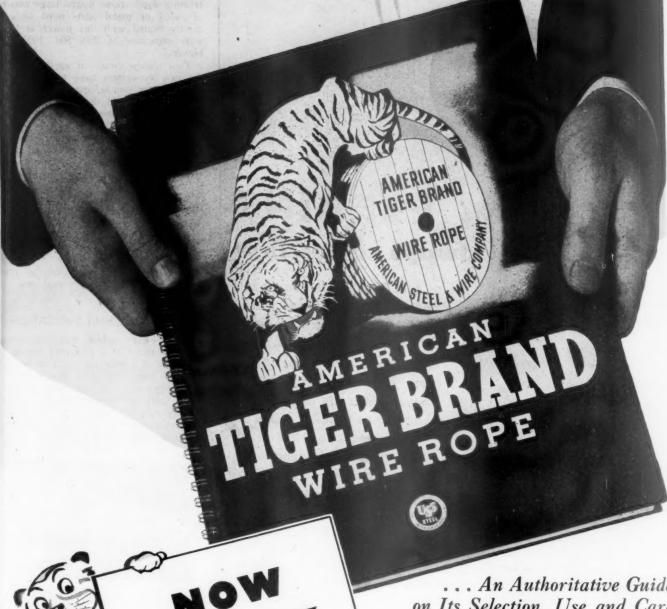
waterproof backing, its famous self-stik adhesive and its cloth body — now is impregnated with a powerful fungicide.

But this important sealing operation only starts to tell the MYSTIK story. Production plants of every kind are finding more and more jobs for this versatile, rugged, tight-gripping tape. As a tool, it performs holding operations on the assembly line . . . as a protector it covers fine-finished surfaces of materials during fabrication or shipment . . . as a mask it works in paint shop and electroplating department . . . and it's the handiest item in the maintenance man's tool kit.

MYSTIK Tape applies fast, holds tight, strips off clean. Ask your distributor how it can go to work in your plant—to speed production and cut costs.



SELF-STIK CLOTH AND PAPER TAPES, PROTECTIVE AND MASKING MATERIALS, WATERPROOF PACKAGING MATERIALS, SELF-STIK STENCILS



New Book on Wire Rope

AMERICAN STEEL & WIRE COMPANY

COLUMBIA STEEL COMPANY

Cleveland, Chicago and New York San Francisco United States Steel Export Company, New York

UNITED STATES STEE

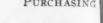
. . . An Authoritative Guide on Its Selection, Use and Care

J UST off the press—American Tiger Brand's new catalog—125 pages crammed with illustrations, specifications and descriptive material to help you select the wire rope that's exactly right for your particular job. In addition, special chapters feature modern methods of splicing, socketing, lubrication, and other facts essential to the proper use and care of wire rope in every field.

This catalog covers the complete range of both American Tiger Brand Excellay Preformed and AMERICAN TIGER BRAND Standard Non-Preformed Wire Rope and accessories.

This valuable book, with its quick-reference indexed pages should be in the hands of every man who buys or uses wire rope. A request on your letterhead will receive prompt attention.

MARCH



(Continued from page 156) treating applications where large masses of metal or metal parts must be efficiently heated with this power at kilowatt capacities of 250, 500, 1000 and higher.

Two highly successful applications of the new converters have been made in the past year, one being a 300 kw unit in a forge plant, and the other a 250 kw unit in use in the melting section of a brass foundry.

In months of operation, according to Durand, these Allis-Chalmers mercury arc frequency changers have performed at higher full load and much higher partial load efficiencies' than is possible with other types of converters for like frequencies; and operating and maintenance costs of mercury arc converters have proved to be much lower. The units are quiet in operation and require no ventilation or air-filtering, since they are water-cooled. The high capacity converters offer no vibration problems.

1 1 1 NEW MOBILE UNIT SUBSTATION

A 2500-kva mobile unit substation, which is ready at a moment's notice to be towed at speeds up to 35 miles per hour to any part of a system where emergency power is required, was recently built at General Electric's Pittsfield Works. One of the largest mobile units ever built-weighing 24 tons and compactly mounted on a 12-wheel trailer



GE Mobile Unit Substation

—it is capable of supplying for 25,000 100-watt lamps, or a fair-sized town.

The complete substation includes the power transformer, high-voltage fuses and disconnecting switches, feeder oil circuit breaker, lightning arresters for highvoltage circuits, and low-voltage metering equipment. A novel feature is a retractable high-voltage disconnecting switch which permits spreading the phases apart to obtain necessary electrical clearances when operating at the highest voltage, and returning them to normal to meet road clearances during transporta-

While in transportation, the fuses and arcing horns are the only parts removed and storage space is provided so they are always available. Upon arrival at the destination, the fuses and arcing horns are installed, the proper circuit connection is chosen, the operating mechanisms are unlocked, connections are made to the power lines, and the substation is ready for use. The completeness and

(Continued on page 160)

always comes first The fact that both the name, PERKINS and the noun, PRE-CISION begin with the letter

"P", is a significant coincidence. For in the final analysis, Perkins is primarily known for its recognized ability to produce gears of extreme accuracy and high finish to customers' specifications, including the Government's which means precision to the nth degree!

Take advantage of the new techniques developed by Perkins for the mass production of precision, custom-cut gears. Remember that the "P" in Perkins stands for Precision-not to mention Promptness when you require action on gear estimates and gear production.

PERKINS MAKES:

Helical Gears Bavel Gears Ratchets Spiral Gears Worm Gears Spur Gears Ground Thread Worms

*ARE YOU ON OUR MAILING LIST?

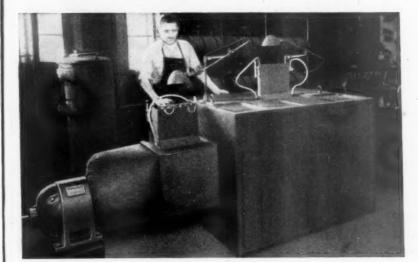
Perkins is the name of the houseorgan we publish monthly; it may be of interest to you. Write us if you care to receive it, P.O. Box 1313. Your good will covers the price of subscription.



Precision
Custom-Cut PERKINS MACHINE & GEAR COMPANY, SPRINGFIELD 2, MASS.



AIR-FLOW TESTS OF TRI CLAD MOTORS



· Tri-Clad motor drives conveyor on wool dryer— Bigelow Sanford Carpet Co., Amsterdam, N. Y.

Plenum chamber test of Tri-Clad motor ventilation at G-E motor factory.

Before new types or sizes of Tri-Clad motors are approved for production, plenum chamber tests are conducted on the ventilating systems of sample models. These measurements serve as a check on previous calculations of the volume and velocity of air through the motor under different conditions. Other tests under load within enclosures and at abnormal ambient temperatures are also made. If your motors must be confined in stuffy spots, G.E. can help you make the right choice to beat the heat. General Electric Company, Schenectady 5, N. Y.



Buy all the BONDS you can—and keep all you buy



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FOR TOUGH GRINDING JOBS... WELDISKS!



... their 3-ply backing stands up to anything!

SEE THAT SINGLE PLY of fibre – especially treated and pressed for double strength and hardness. That's what keeps Weldisk edges from going flabby.

CLOTH

AND THOSE 2 PLIES of heavy cloth, encasing the fibre! That's what keeps Weldisks from cracking when bent.

IN ADDITION to this unique 3-ply backing, there's one more thing that gives Weldisks exceptional stamina. It's the grit itself – made from electric furnace treated aluminum oxide, hardest, longest-lasting abrasive in commercial use.

TOUGH GRIT! Tough 3-ply backing! That's why Weldisks cut faster and longer. That's why they're safer, more economical to use. For getting out work, nothing like Weldisks! Try them! All grits 320 to 16.

Abrasive Products, Inc., South Braintree, Mass.



(Continued from page 158)
ease with which it can be placed in
service is one of the outstanding features.

This mobile unit substation can be used to transform power from circuits of 52800, 26400, or 1300 on the high-voltage side, and circuits of 2400, 4160, 7200 or 1470 on the low-voltage side. It can be used on practically all the substations in the customer's system to increase their power output or as a substitute if emergency conditions shut down one of the regular substations.

NEW "QUALITY CONTROL" HANDBOOK

"Quality Control" is the title of the new pocket size handbook on scientific inspection which has just been released by Continental Machines, Inc., 1301 Washington Ave. South, Minneapolis, Minn.

This new case-bound handbook is exclusive and unique in its concise explanation of scientific inspection through controls offered by precision measuring instruments. The use of over 200 photo-



Continental's "Quality Control" handbook contains over 200 photographs, diagrams, charts and tables.

graphs, diagrams, charts, and tables make the explanation of scientific inspection interesting, absorbing, and informative. It contains many conversion tables and measuring data which give pertinent information for the precision measuring methods required in scientific inspection.

One section contains thirty-five subjects vital to quality control which are highlighted with examples showing how to use the precision measuring instruments. Among the precision instruments and methods shown for quality control are the new mobile inspection units, sine bars, vernier gages, optical flats, Comparator gages, etc. Another section of the book contains sixty-four key questions, along with their answers which serve both as a check and test of the knowledge gained by the reader.

Copy of "Quality Control" will be sent to anyone requesting it on company letterhead. Depending upon the situation they will be supplied in quantity to inspection departments of industrial plants, schools and other training institutions.

MARCH

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HOW

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FN Figure w (This covere heat a See ad

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FLEXIBLE HOSE COUPLINGS

HOW TO RECOGNIZE

Body can be identified by grommet extending from center of cavity. Sleeve is tapered in one direction only. Nut is similar to a compression nut except that seat for sleeve at bottom is square, not belled.

HOW TO ASSEMBLE

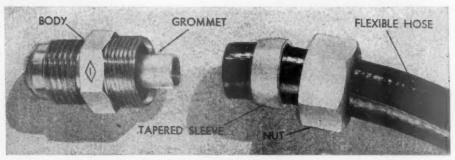
Cut off flexible hose squarely with ordinary cutting pliers. Pass hose through nut and sleeve, and push into body of fitting over grommet as far as it will go. As-semble nut to body and tighten as much as possible. Section diagram shows how hose is compressed between sleeve and grommet giving a tight, leakproof joint.

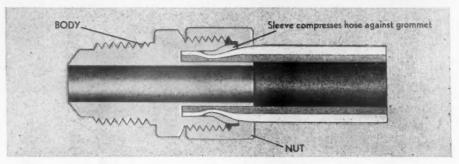
USED WITH SPECIAL HOSE

FN Fittings are designed specifically for use with Imperial FN Flexible Hose. (This is a special synthetic-lined, fabriccovered hose, finished with high luster, heat and oil resistant flexible lacquer. See additional data under ADVANTAGES.)

APPLICATIONS

Used for making up flexible gasoline, oil and grease lines for automobiles, trucks, power units, machinery, etc. Especially adapted for installation and replacement work, or where only a limited number of lines of a given type are needed. When Rexible lines of a given specification are required in quantity, Imperial Flexible Hose Assemblies made up exactly to your requirements with fittings attached should be specified.





ADVANTAGES

Makes it simple to make up any desired flexible gasoline, oil or grease line in a few moments. Hose is supplied in 25-foot coils and can be cut to any needed length. A wide range of attachable fit-tings are available which give any desired type of end connection.

Hose is strong, durable and will with-

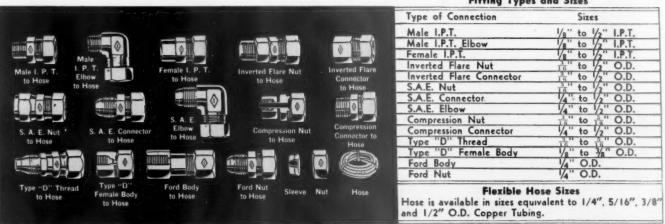
stand severe twisting and bending. Has oil and gasoline proof synthetic lining. Has working capacity of 150 to 300 lbs. per sq. in. depending on size.

STOCK SIZES AND TYPES

Couplings have one end for connecting to flexible hose; other end can be furnished in the standard types and sizes of connections shown in the table below.

THE IMPERIAL BRASS MANUFACTURING CO., 512 So. Racine Ave., Chicago 7, Illinois

Fitting Types and Sizes



IMPERIAL * Headquarters for tube fittings and tube working tools





MARC

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DON'T LET WOODERUN WILD IN YOUR PLANT

LIKE SOME TERRIBLE PLAGUE, rust spreads its ruin everywhere.

Annually this thieving demon costs American Industry more than a billion dollars!

Until recently, rust has been accepted as a necessary evil in many operations.

Today, thanks to new developments, various types of rust-preventive coatings and lubricating oils are obtainable.

> SHELL ENSIS RUST-PREVENTIVE COATINGS

As protection against rain and snow during outdoor storage, or high humidity conditions inside, Shell offers a complete line of Shell Ensis Rust Preventives. These oils, fluids, and compounds come in various grades, each designed to meet a specific condition. Protective coatings range from thin transparent coverings that need

not be removed, to coatings that resist extremes of weather over long periods.

SHELL TELLUS
RUST-PREVENTIVE
LUBRICATING OILS

Where moisture is a factor, Shell Tellus Oils are recommended for machine lubrication. These scientifically developed oils cannot remove rust once it has started. However, because of special, built-in, rust inhibitors, they afford protection against the formation of rust—this without loss of lubrication qualities.

Call in the Shell man. He is a trained man, competent to study your operation and advise you. Let him show you how to keep rust out of your

plant. Write, wire or phone
—Shell Oil Company Inc.,
50 West 50th Street, New
York 20, N. Y., or 100 Bush
Street, San Francisco 6, Calif.



SHELL LUBRICANTS FOR EVERY INDUSTRIAL USE

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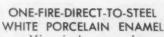
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Pemco Mirac is the name of a one fire direct-to-the-steel, white porcelain enamel, developed by the laboratory of the Pemco Corporation, 5601 Eastern Avenue, Badtimore, Md. It is a one coat complete finish that is interestingly described in new folder. At present a special steel base is necessary for best results. The new coating has high opacity, high resistance to physical and thermal shock, and has brilliant high lustre. It is said to be as tough as any ground coat.

A NEW HOT-FORMING MOLDED LAMINATE

new Westinghouse plastic, known as Micarta 444, combines the desirable molding properties of thermoplastic materials and the good physical characteristics of thermosetting materials. A modification of the resin in standard Micarta causes the substance to soften when hot,

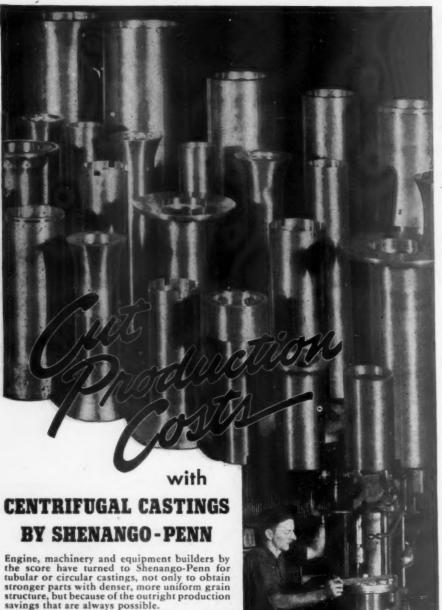


Micrata 444 being formed in press.

as do thermoplastic materials, but at a much higher temperature, about 300 degrees F., which is far above the service Thus the new Micarta can be heated and pressed into deep-drawn and complicated shapes. The pressures are lower-about 50 to 100 pounds-and the times much shorter than required for curing of thermosetting resins. Dies can ·be made of hard wood or of thermosetting laminates. This makes the manufacture of a relatively small number of parts from a single die economical as the cost of these parts is not loaded with the distributed cost of an expensive die.

When cool the product has the good strength and freedom from embrittlement characteristic of many thermosetting materials. Used in aircraft for nonstructural and semistructural members, a weight saving of some 50 per cent over a comparable volume of metal has been achieved. In addition, a considerable saving in man hours of labor has been made. In one particular operation, a

(Continued on page 166)



Less Waste Material. Since castings produced centrifugally are accurately concentric and can be held to more precise dimensions, it follows that finishing involves much less scrap metal than is otherwise possible. Secondly, impurities accumulate at the inside surface where they are quickly and easily removed again contribution. quickly and easily removed, again contributing to a substantial saving of metal both inside and to a substantial saving of metal both inside and out. Thirdly, the inherent ability of the process to produce a precisely uniform wall section obviously permits casting to a closer tolerance, saving still more metal.

Lower Machining Time. Since material waste is minimized in several ways, machining time is, of course, correspondingly low—a combination saving that is attractive indeed.

Bulletin 143 gives complete information about Shenang. Penn centrifueal castings including

Shenango-Penn centrifugal castings including other advantages and specifications of the various available alloys. Write to the Shenango-Penn Mold Company, 2453 W. Third Street, Dover, Ohio.



In addition to foundry facilities, Shen ango-Penn is well equipped for all kinds of machining and finishing operations. Here flanges of bronze castings are shown being drilled.



NG



Parts like these are COLD-FORGED for

maximum strength . . . extreme accuracy . . . best appearance . . . minimum cost

Every one of the fasteners shown above has been RB CW cold-forged — and provides the maximum in desired qualities.

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good ittleiosetnonRB&W cold-forged products have maximum strength, because this cold-forging process intensifies the grain and forms unbroken flow lines in the metal. The operation of cold-forging also acts as an automatic inspection of the material—for any serious seams or imperfections in the material will immediately be opened up and revealed.

The RB&W cold-forged product has extreme accuracy and fine finish because

the modern cold-forging equipment employed holds the work to close tolerances.

The RB&W cold-forged product shows minimum manufacturing cost because of the high speed of RB&W's equipment and because the cold-forging process virtually eliminates scrap waste.

The Longest Experience in Automatic Cold-Forging

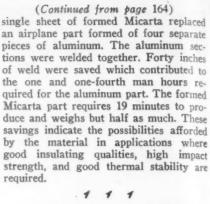
This is RB&W's 100th year. Among the various manufacturing processes in which RB&W pioneered is automatic cold-forging. This unmatched experience—and our expanded facilities—make RB&W your logical choice for cold-forged parts. So keep both cold-forging and RB&W in mind; when war-time obligations are fulfilled, RB&W's equipment will again be available.

RBEW

Russell, Burdsall & Ward Bolt and Nut Company. Factories at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill. Sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Los Angeles, Portland, Seattle... with the industry's most complete, easiest-to-use catalog.

IIII A DE LO PARENTE PASSELLA, BURDSALL & WARD BOLT AND NUT COMPANY

MARCH,



AXIAL FLOW FAN UNITS

Two new high efficiency axial flow fan units have just been announced by Dynamic Air Engineering, Inc., 1619 Alameda Ave., Los Angeles, Calif.

Equally unique in size from the mighty 60 inch to the midget 2 inch they are believed to be the largest low pressure



Dynamic's New Axial Flow Fans

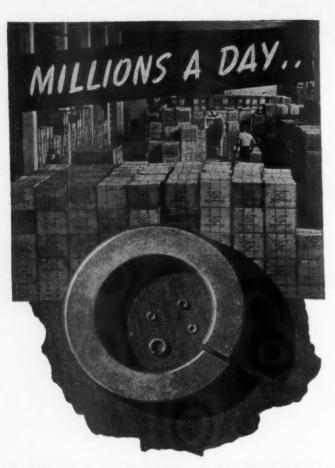
and smallest high pressure propellers engineered and produced on the Pacific Coast.

Performance by ASH & VE standard code of test is as follows: The 60 inch low pressure propeller driven with a 10 hp 1150 rpm motor delivers approximately 60,000 cfm free air and 5,000 cpm at ½ inch sp. Wide general industrial use is expected particularly where space, economy and efficiency is important in air movement.

The midget 2 inch propeller has been developed for a complete fan unit to be manufactured and marketed by Dynamic Air Engineering, Inc. It will be powered by a tiny motor of approximately .002 hp and will deliver 30 cfm at .30 inches sp. Originally engineered for the cooling of modulators in air borne electronic equipment, it is expected to find many and varied applications.

NEW SHOE SOLE MATERIAL

New material known as "Neolite" for shoe soles, is announced by The Goodyear Tire & Rubber Co., Akron, Ohio. Though the material is neither rubber, leather, plastic nor fabric, and weighing no more than leather soles, it is said to be the only material besides leather which provides a firm platform for the foot, and to show greater wearing ability than leather soles. It is moistureproof and waterproof, and will not leave footmarks. It is said that "Neolite" is less likely to slip on wet or dry surfaces than leather or rubber.



SPEED ORDERS YOUR WAY!

The amazing ability of the George K. Garrett Company to turn out MILLIONS of Washers every day assures orders on time, every time!

We manufacture, in our own plant, "CONTROLLED TENSION" Spring Lock Washers and Flat Washers for every need of war and industry.

Our entire set-up — from research and testing laboratories, to precision machines and scientific heat-treating — is geared for accuracy, speed and mass production. That's why we can build "CONTROLLED TENSION" into every Diamond G Spring Lock Washer—Standard or Special—and still DELIVER YOUR ORDER ON TIME, or ahead of schedule.

Play safe with your production! Specify Diamond G's, the QUALITY Washer for top Performance and Service.



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To detect and arrest the cause of a shortage or delay in machine-production of war materiel, the first elementary step toward solving the mystery is this question: "Where did the work-schedule fall down?"

And where war-production machines are equipped with Veeder-Root Counting Devices, the mystery can be solved then and there. For a checkup of the counter-figures on all machines will show right where the trouble occurred. Even more than that, Veeder-Root Devices make it possible to police a plane against such production upsets. Because a regular check of the counter-figures will show when a machine begins to fall behind schedule, so that mechanical or power, adjust-

ments can be made before trouble really takes h.ld.

This is what's known as Veeder-Root COUNTrol.

And it would be a quick and easy matter to cover your war-production with it completely, right now.

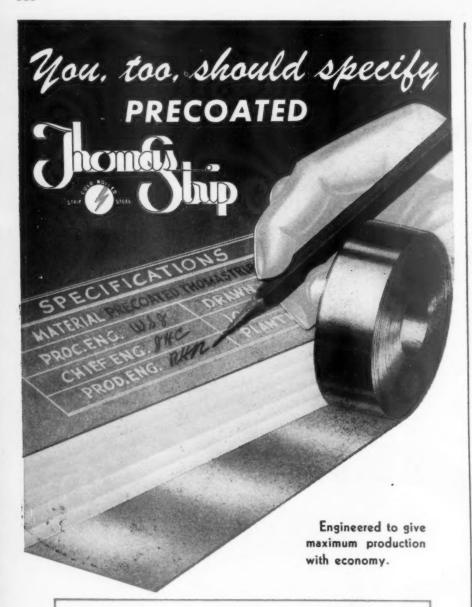


VEEDER-ROOT INC.

Hartford 2, Connecticut

In Canada: Veeder-Root of Canada, Ltd., Montreal
In England: Veeder-Root Ltd. (new address on request)

MARCH



Thomastrip Precoated is designed to give manufacturers a metal with functional, corrosion resisting, heat treating and decorative benefits. Suitable coatings can be furnished for brazing, drawing, soldering, welding, tinning or further plating.

Due to long experience in the production and application of coated steel, Thomas is prepared to offer assistance in the use of these products for a variety of manufactured parts. Remember, too, that Thomas controls the base steel, a further guarantee that the coated material is of the highest possible quality.

Thomas precoated strip steel warrants your investigation. We invite your inquiry.

ELECTRO-COATED ZINC, COPPER, NICKEL AND BRASS . . . HOT DIPPED TIN AND SOLDER . . . LACQUER COATED IN COLORS . . . UNCOATED PRECISION STRIP, CARBON AND ALLOY SPECIALTIES.

THE THOMAS STEEL CO. • WARREN, OHIO COLD ROLLED STRIP STEEL SPECIALISTS

DIAMOND CARBOLOY WHEEL **DRESSERS**

Wheel dressers made with small commercial diamonds set into a matrix of Carboloy cemented carbide are claimed to have made possible a considerable saving in time and money at a large aircraft engine plant in Detroit, where they are being used to true-up recesses in finish grinding wheels employed to grind the O.D. on aircraft cylinder sleeves. The Carboloy diamond-impregnated dresser contains diamond particles distributed throughout the matrix, thereby insuring that at least one or more of the stones will be in contact with the grinding wheel at all times as the holder is swung through a small arc. New cutting faces are presented to the abrasive wheel as layer after layer of diamonds are reached and exposed due to the gradual wearing away of the carbide matrix. Hence, no lapping and no re-mounting are needed. Reports are said to indicate that the dressers lower the cost per wheel dressing and that they withstand abuse which would ruin a single diamond dresser.

INSPECTS MOVING PARTS

The accompanying illustration shows industrial X-Ray fluoroscope for the inspection of moving objects, developed by the North American Philips Co., Inc.,



Conveyor Type X-Ray Inspector

New York. It is known as the Norelco Searchray Model 150 CF. It is of the conveyor type. Operators can be positioned on one or both sides of the unit. Objects are viewed through the indirect fluoroscopic head and defective pieces can be marked without stopping the conveyor. Power supply is 230 volts, 50-60 cycles.

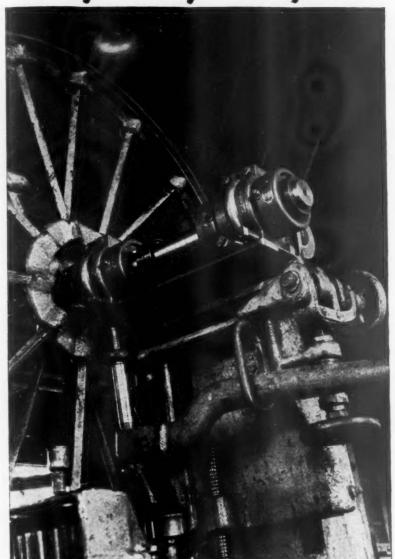
1 1 1 "HOW TO RUN A LATHE"

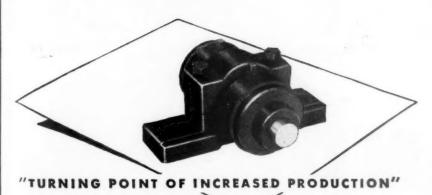
The South Bend Lathe Works, South Bend, Ind., has just issued the 43rd edition of their popular book, "How To Run A Lathe". A number of changes in text material and illustrations have been made since the previous edition was printed in 1942.

The book contains the latest information on the operation and care of metal working lathes. It covers such subjects as the operation of the lathe units, grinding cutter bits, making accurate measurements, plain turning, chuck work, taper turning, boring, drilling, reaming, tapping,

(Continued on page 172)

Zing-Zing-Zing Goes the Band Saw!







... Up-Up-Up goes production ... since Fafnirs were put on the job! It was a dollars-and-cents proposition – power loss as well as excessive maintenance costs – that led the operators of a large northwest lumber mill to seek better bearings for their big band saw.

They put the problem up to the Fafnir Distributor and it was met, as usual, with the exact type and size of Fafnirs. The old babbitt bearings were replaced by Heavy Series Double Bearing Blocks equipped with two Wide Inner Ring Bearings fitted with dust-excluding shields.

Now that heavy band saw sings a different tune. Its $2^{15}16''$ shaft spins smoothly sixteen hours a day resawing heavy timbers. Its Fafnir Bearings resist sawdust and spray – and have operated many months delivering friction-free power with minimum maintenance. "Well pleased with the saving," reports the sales-engineer.

Hard work, tough operating conditions, long hours are taken in stride by these friction-free Fafnir Units. There's an exact Fafnir Ball Bearing Transmission Unit to meet the requirements in every industry. Fafnirs alone offer the Wide Inner Ring Ball Bearing and Self-locking Collar that simplify installations. Only Fafnirs have Balanced Design – larger balls and deeper races – that means longer bearing life. The Fafnir Bearing Co., New Britain, Conn.



FAFNIR Ball Bearings

THE BALANCED LINE MOST COMPLETE IN AMERICA

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AN INDUSTRY DELIVERS

 Guns, ammunition and supplies are needed in tremendous quantities to win the war. They must be delivered in usable condition. Long hauls under the worst conceivable conditions demand containers of strength and durability far in excess of pre-war standards.

Millions of "V" boxes used by Government agencies in a single month, many made by

Inland, have fulfilled these requirements, safely delivering vital war supplies. Often containers act as the only protection against the elements during open storage.

The fibre board industry in the development and production of the well-known "V" boxes has made a major contribution to the winning of the war. Inland, as one of the leaders, is proud to have taken an active part.



INDIANAPOLIS, IND. . MIDDLETOWN OHIO . EVANSVILLE, IND. . MILWAUKEE, WIS. . DETROIT, MICH.



STANDS UP UNDER

Those spectacular paratroopers' boots are built to soak up a lot of shock when he hits the ground at 18 MPH . . . Likewise, "UNIVAN" castings, with their fine-grained Nickel-Vanadium steel structure, stand up under continuous shock with notable lack of fatigue

Where the going is tough specify "UNIVAN"-that tough steel. Union's long experience with alloy steels can be used to your advantage in whipping the "trouble jobs" of industry.



UNION STEEL CASTINGS BLAW-KNOX CO. PITTSBURGH, PA.

MAKERS OF Driving Wheel Centers, Locomotive Frames, Pump Casings, Vault Doors and Frames, Annealing Boxes, Spindles, Coupling Boxes, Open Hearth Charging Boxes, Gear Blanks — and other Castings for Steel Mills and General Industry.



If you're the production champion of your industry, or aspire to be, you know what good lighting, and good lamps, mean to quality, quantity, safety and true economy of production.

CHAMPION Fluorescent and Incandescent Lamps are designed, manufactured and tested to be worthy of the responsibility for dependable, low cost industrial lighting.

CHAMPION lighting engineers are at your service, without charge, to provide competent and unbiased assistance on your industrial lighting problems.

CHAMPION industrial distributors combine with Champion's specialized industrial production set-up to supply your lamp needs with the utmost efficiency at lowest cost lighting effectiveness and lamp performance taken into account.

> Look for the Diamond mark on Fluorescent and Incandescent lamps. It's the mark of an industrial production CHAMPION.

HAMPION LAMP V Lynn, Massachusetts

(Continued from page 168)

cutting screw threads, reference tables, etc. Written clearly and concisely, it is widely used by machinists and as a shop text in schools and apprentice training courses. This edition contains 128 pages $-5\frac{1}{8}$ " x 8", and over 365 illustrations. Postpaid copies are available with paper dovers for 25c or with leatherette covers for 75c in stamps.

TERMINAL MARKINGS FOR **ELECTRICAL APPARATUS**

The American Standards Association, 29 West 39th St., New York, N. Y., has just approved a fourth revision of the American Standard, Terminal Markings for Electrical Apparatus, the purpose of which is to keep the basic rules for identifying terminals in step with the newest accepted practices in the electrical industry. New section on electric water heaters has been introduced and color is employed as a means of identifying the wir-The standard covers the following types of apparatus: generators, a-c and d-c motors-capacitor, single-phase and other types; transformers-power and distribution; feeder voltage regulatorsstep and induction types; electric water heaters-including connections to thermostat; attachment plugs and receptacles; industrial control; instrument transformers; and current limiting reactors. Price \$1.00 per copy.

ELECTRIC WELDED TUBING

"Better Products with Electric Welded Tubing" is the title of profusely illustrated, quite readable text bulletin on welded tubing, published by the Formed Steel Tube Institute, Keith Building, Cleveland, Ohio. It illustrates parts, assembly methods, bending, and numerous war and peacetime products made with welded tubing. Three pages are devoted to listing of specifications for welded tubing, and chart of standard sizes.

COLD FINISHED BAR STEELS

Thirty-two page booklet on cold finished bar steel, what it is, how it is made, and where it is used is available from Bliss & Laughlin, Inc., Harvey, Ill. The brochure points out that cold finished bar steel is a prime construction material for all types of mechanical equipment, processing machinery, scientific instruments, farm implements and a myriad of

1 1 1 BOOKLET ON SALT

There are 14,000 known uses for salt, according to booklet on salt, entitled "Salt," issued by the Diamond Crystal Salt Co., In., St. Clair, Mich. The book by text and illustration tells how underground salt deposits are pumped from wells that reach as much as 2,500 feet straight down, and details what is known as the Alberger process for producing salt.

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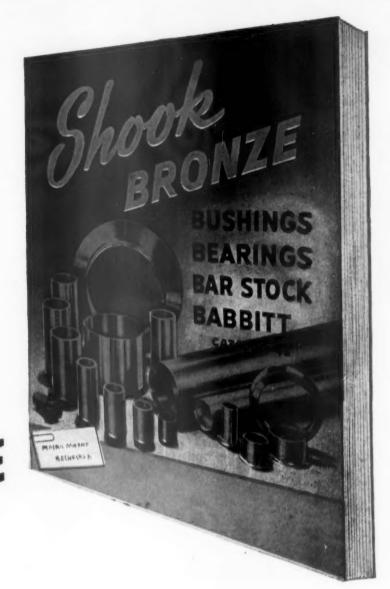
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LOOK TO SHOOK IN WAR AND PEACE



Many of America's mighty weapons and the machines that build them have bearings made of Shook bronze... men of vision are looking and will continue to look to Shook for sleeve bearings and alloys wherever shafts are turning.



Send for new catalog No. 45 ... over 850 sizes of standard bronze bushings ... over 400 sizes of machined bronze bars ... flanged bushings ... babbitt metals.

Shook BRONZE CORP.

GREENLAWN AND LAKE STREETS . LIMA, OHIO

Among the ASSOCIATIONS

PURCHASING AGENTS ANALYZE INDUSTRIAL ADVERTISING

A panel of three prominent Baltimore purchasing agents expressed their views on industrial advertising, at a recent meeting of the Maryland Industrial Marketers Association. The panel consisted larly attracted by it.

first call", many copywriters cram too much in that "few dollar space". Consequently the Purchasing Agent does not have time to read it, nor is he particu-



The panel of Purchasing Agents at meeting of Maryland Industrial Marketers Association included the following: Frank A. Carter, P.A., Maryland Dry Dock Co.; Lester H. Palmer, P.A., Koppers Co., Inc.; Stuart F. Heinritz, editor, Purchasing Magazine, Moderator; and J. Herbert Gaston, P.A., City of Baltimore.

of Lester H. Palmer, Purchasing Agent, Koppers Co., Inc., J. Herbert Gaston, Purchasing Agent City of Baltimore, and Frank A. Carter, Purchasing Agent, Maryland Dry Dock Company, all of whom are active members and officers of the Purchasing Agents Association of Baltimore. Stuart F. Heinritz, editor of PURCHASING Magazine, acted in the capacity of moderator.

It was the consensus that advertising is an indispensable educational and news medium, but that many advertisers do not receive full value for their advertising dollar for the simple reason that they try to make their advertising copy cover too much ground, and that the advertising would be more effective if the outstanding or important use values of the product were more effectively emphasized.

Discussing business paper advertising, Lester H. Palmer declared that in much the same manner that high pressure salesmen try to "shoot the works on the

The Purchasing Agent naturally has his eyes open for new ideas to be found in advertising, he said, but time is the most critical item today, a fact that should be uppermost in the minds of those preparing advertising. "The advertisement should be short, to the point, convey the idea at a glance," he declared. "That's the type that has pulling power and it is the type that the Purchasing Agent can include in his daily routine. Picturization, too, is very important, he said, stating that effort should be made to convey ideas by pictures, as they are more convincing and save time.

Mr. Palmer expressed the thought that advertising emphasis should be on those points that are different from features of competitive products. "It should be assumed", he said, "that the buyer knows the factors that are common to competitive items, and therefore it is advisable

(Continued on page 176)

PURCHASING AGENT AS SALESMAN SEES HIM

R. C. Sauer, third vice president of the Purchasing Agents Association of Rochester, N. Y., Purchasing Agent, Will Corp., advises that the January 24th meeting of the association held at the Rochester Club recorded a fairly good turnout in spite of the fact that the thermometer dipped to 7 below zero, the cold being aggravated by howling winds of almost gale proportions. Under the leadership of First Vice President David Borlen, three members of the local WPB headed a panel discussion on priorities and associated problems.

Mr. Sauer states that discussion lead by Len Thomasma, assistant sales Manager, Todd Company, on the subject "The Purchasing Agent as the Salesman Sees Him" at the association's November 22nd meeting proved of unusual interest, Mr. Thomasma's talk being in form, an answer to that by John M. Brown of the Veeder-Root Inc., on "The Salesman Today as The Purchasing Agent Meets

1945 BUSINESS OUTLOOK LOUISVILLE, KY.

A. E. Loeffler, Jr., chairman of the program committee of the Purchasing Agents Association, of Louisville, lead a panel discussion on "The Business Outlook for 1945" at the association's January 17 meeting which was held at the Kentucky Hotel. Professor Charles Williams of the University of Louisville, predicted a decline in volume this year, pointing out that the volume in 1944 was from 8 to 14 percent less than in 1943.

Jack Schneider of the General Box Company expressed the opinion that business would be good during 1945 even if the war in Europe ended soon. He pointed out that many concerns would have a minor reconversion problems, some would have no problems, though some that had been given over entirely to war production, as in the automotive industry, would have serious problems to solve. He stated that plywood manufacturers on the West Coast could operate six months after VE day, restocking warehouses throughout country, remarking that a similar statement had been made by a large manufacturer of plumbing fixtures.

A. E. Loeffler, Jr., expressed the opinion that 1945 should be a good profit year for manufacturers.

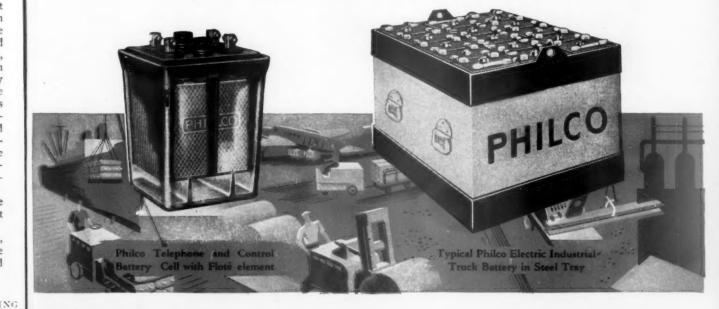
One new membership application, namely that of Harold Borders of the Reynolds Metal Company, was presented at the meeting.



Consistently through the years, users of PHILCO Storage Batteries—both motive power and stationary types—have been first to get the major developments contributing to high capacity, greater efficiency, longer life, lower cost. Newest Philco first in industrial storage battery engineering is the new Philco "Thirty" with 30% longer life—now available in certain types and limited quantities for electric industrial trucks. Catalogs of this and other modern Philco Batteries for your special needs will gladly be sent on request.

Philco Corporation, Storage Battery Division, Trenton 7, New Jersey

For 50 years a leader in Industrial Storage Battery Development



MARCH



NEW HANDBOOK

SIMPLIFIES SELECTION AND APPLICATION OF AIR DIFFUSERS

FREE: New Engineering Data on the art of Air Diffusion in general and the proper application of KNO-DRAFT ADJUST. ABE DIFFUSERS in par-

Performance Data Selection Charts Air Capacity Tables with instruction sheets Damper Setting Chart Air Direction Adjustment Air Direction Adjust Chart Standard Specifications Complete Price List

FREE: To those responsible for air diffusion "design."

And to those who install the equipment and are responsible for its performance.

IT CONTAINS: Clear sketches, charts, dimension prints and instructive text for quick, accurate SELECTION — APPLICATION — LOCATION - ASSEMBLY - ERECTION - TESTING -ADJUSTMENT of air diffusers and of ACCES-SORY EQUIPMENT such as dampers air equalizing grids, mounting rings and air sectorizing baffles.

All set up in durable loose-leaf binder to facilitate the insertion of supplementary or revised data which will be forwarded from time to time to those who have sent for this catalog. Write for your free copy to Department F-1.

W. B. CONNOR ENGINEERING CORP.

114 E. 32nd Street



New York 16, N. Y.



Here, in the Bendix-Weiss Constant Velocity Universal Joint, Strom Balls do their part in making military vehicles, from Jeeps to 14-ton Armored Cars, the efficient fighting equipment that they are. This is only one spot in our great war production effort where the high degree of perfection of Strom Balls serves industry, enabling it to provide the finest bearing equipment towards its great contribution to total victory. Strom Steel Ball Company, 1850 South 54th Avenue, Cicero 50, III.

Largest Independent and Exclusive Metal Ball Manufacturer



(Continued from page 174) to stress new developments and unusual characteristics.

"For real results, long period advertising is necessary, to keep trade names and company names before the market.

"Purchasing Agents can lose money by not taking some action in connection with advertisements that convey an idea that may be useful to their company. What action should be taken is for the Purchasing Agent to decide. I believe it is well to record all ideas or advertisements that you may wish to recall at some later time. This is easily and quickly done by noting on a small card the item, advertiser's name, magazine, issue, and page, keeping such cards in an 'ad file.'

Mr. Palmer exhibited several advertisements which he said "attracted my attention to the extent that I looked them over thoroughly, and feel that I profited by doing so." He analyzed these advertise-

ments as follows:

"Philco Corporation. Short and to the point. It tells the reader that Philco makes a battery that gives 30% longer life. To industrial purchasers this means something.

"Norton Company. I like this ad because it conveys the fact that the Norton Company is equipped to make abrasives ranging in size from one ounce to a ten ten pulp stone. If nothing else, it instills in the mind of the reader that Norton is equipped to meet the purchaser's requirements whatever they may be.

"National Wooden Box Assn. This ad is educational in that it conveys the fact that half of the available lumber today is allocated for essential wooden packaging. The wide awake purchasing man is always eager to broaden his knowledge. This ad serves that purpose.

"Fairbanks Morse. The purpose of this ad is to keep the name of the advertiser before prospects; also, to emphasize that Fairbanks Morse will continue to give quality. In Purchasing quality is a big factor. The ad does the job for which it was intended, very well.

"Joseph T. Ryerson & Son, Inc. The Purchasing Agent must secure what he wants when he wants it. This ad conveys that Ryerson is prepared to meet the purchasing agent's requirements.

Valvoline Oil Co. Rust is a tremendous problem in present day industry. Undoubtedly profits have been sheared tremendously by rust alone. Where there is a rust problem, this ad, in my opinion, will attract the purchaser's attention to the extent that he will follow through. This ad invites attention and in many cases warrants action."

Readable Magazines Most Valuable

J. Herbert Gaston, Purchasing Agent, City of Baltimore, declared it to be his experience that most direct mail does not hit the spot and finds the waste basket. Purchasing Magazine, he said, covers the entire field of informative matter, and includes a wide variety of advertising.

Mr. Gaston said that users of direct mail in many instances did not keep their mailing lists in good shape. He stated that he had received as many as five

(Continued on page 180)

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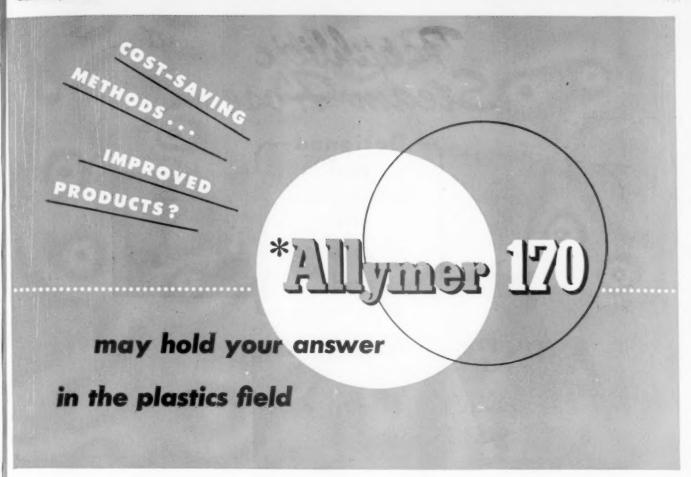
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Allymer 170 possesses especially desirable qualities for impregnated and laminated products. For example,

Rapid Curing—Allymer 170 has been developed expressly for reducing curing time and speeding up production.

Simplified Tooling—Allymer 170 is used with contact or very low pressures. Equipment required is relatively simple and inexpensive—particularly important with short-run items.

Larger Sections—Allymer 170 confers great strengths on laminates. Larger parts may be made—replacing two or more sections, thus reducing assembly costs.

These are but a few of the features which combine to make Allymer 170 unique in the plastics field. Your investigation of its adaptability to your products may bring important improvements to your operations.



SEND FOR DATA ON THIS NEW MONOMER

Allymer 170 is a viscous liquid of low volatility which solidifies into a hard, insoluble, infusible solid when heated in the presence of a catalyst. It has practically no odor at room temperature, is non-irritating to the skin, evolves no gaseous or other by-products during polymerization.

Additional data is available on request—samples may also be obtained for experimental purposes.



PITTSBURGH PLATE GLASS COMPANY

COLUMBIA CHEMICAL DIVISION

GRANT BUILDING . PITTSBURGH 19. PA.

CHICAGO . BOSTON . ST. LOUIS . PITTSBURGH . NEW YORK . CINCINNATI . CLEVELAND . PHILADELPHIA . MINNEAPOLIS . CHARLOTTE . LOS ANGELES

MARCH

Republic Steam Hose

- Designed—
and
Reinforced
for
Pressures
and
Temperatures



EPUBLIC technologists have studied the effects of continued high steam pressure and temperature on hose structures. Through this research, a complete line—Republic Double Cross, Tower, Hector, and Republic Asbestos Hose—is constructed and reinforced to meet all service conditions. Each type

DIVELE CAUSE
STEAM

and each size is designed with an unusually high safety factor and tested for burst strength as well as for working pressure. Tell your Republic Distributor your requirements—flue cleaning, thawing, pile driving, steam hammer, foundry and steam engine service, etc.—and he will recommend a Republic Steam Hose designed for that service.



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Why make three welds when two will produce a better piping job? Where it is necessary to change both the direction of flow and size of pipe, the Midwest Reducing Elbow replaces two welding fittings: (1) a standard elbow and (2) a reducer. The many important features are enumerated at the right.

All the advantages of Midwest Standard Elbows are to be found in Midwest Reducing Elbows: unusual dimensional accuracy and uniformity, beneficial effect of working metal in compression, stress relieving, etc. Centerto-end dimensions are the same as in standard elbows with which they are interchangeable.

The Reducing Elbow is only one of the many Midwest developments designed to improve the quality of welded piping and to save cost in erection. Write for Bulletin WF-41 for complete information about the advantages of Midwest Welding Fittings.



Eliminates One Weld
Cuts Installation Costs
Saves Time
Reduces Turbulence
Improves Appearance

WELDING FITTINGS
IMPROVE DESIGN AND
REDUCE PIPING COSTS



MIDWEST

PIPING & SUPPLY COMPANY, INC.

Main Office: 1450 South Second St., St. Louis 4, Mo.

Sales Offices: New York 7—(Eastern Division) 30 Church St., Chicago 3—645 Marquette Bldg. Los Angeles 33—520 Anderson St. Houston 2—229 Shell Bldg. Tulsa 3—533 Mayo Bldg. Atlanta 3—Red Rock Bldg. South Boston 27—426 First St.
Distributors in Many Cities



At every step in manufacture, Quality is the watchword at Lunkenheimer . . .

Quality you can see in every line of a Lunkenheimer valve . . . plus built-in quality that reveals itself in top performance and longer service life when these finer-made valves are put to work.

Simplicity of design, correct proportions and perfect balance of all parts, reduce maintenance costs to a very minimum.

On every industrial front, Lunkenheimer Valves are proving their exceptional staying qualities.

A Lunkenheimer Distributor is located near you, ready at all times to assist with your maintenance and operating problems.



RESISTANT ALLOY VALVES, 125 TO 2500 LB. S. P.; ER MOUNTINGS, LUBRICATING DEVICES, AIRCRAFT FITTINGS

• Fig. 2125-125-1b. S. P. Bronze Gate, Double Disc, Rising Stem



(Continued from page 176) copies of an identical piece of mailing matter.

In conclusion, he stated, "Personally I get the most value from magazines that I can read leisurely at home. Among these are Purchasing Magazine, the National Geographic magazine, and Fortune.

Mail Advertising

Frank A. Carter, Purchasing Agent, Maryland Dry Dock Co., commenced his comments with the statement that "I want to emphasize that I believe in advertising and that advertising pays. Advertising first is a silent salesman, and it should be presented to the buyer or consumer in the same language which a salesman uses in personal contact with the prospective customer, or as near to that language as possible.

"No sale can be consummated without a meeting of minds and, unless advertising is of such type and character as to be pleasing both from the standpoint of form and the information given to the prospective buyer, it has value."

Speaking of faulty mailing lists maintained by some advertisers he said that his company received six copies of the same advertising material addressed to individuals who had not been with the company for several years-four had severed their relations with the company four years ago, and two of them seven years ago. In one instance his company received 11 copies of a certain advertisement and in another, 13 copies. In another case he received four out of nine copies of the same piece of material.

Several years ago I was so impressed with the amount of advertising that I received illustrating materials in which I had no interest whatsoever, that I kept a record of it over a period of eight weeks," he continued. "Based on a 50,000 run of each type of advertising, the amount of material crossing my desk in which I was not interested cost a minimum of \$2.67."

Mr. Carter exhibited an advertising piece covering a non-ferrous metal product, which he highly commended because "gives specifications and engineering data which can be used by both the purchasing agent and the shop. This type of material leads to a better understanding with the man requisitioning the material, the man using it in the shop, and the purchasing department."

Concluding his remarks, Mr. Carter emphasized the desirability of publishing material meant for filing purposes, in a uniform or standard size-81/2" x 11", which will fit standard filing equipment.

4 THREE MINUTE TALKS BY MEMBERS - WINNIPEG

An innovation that proved both practical and highly entertaining, featured the January 11th meeting of the Winnipeg (Canada) Association of Purchasing Agents, held at Moore's Restaurant, Winnipeg. During the dinner hour Pres-

(Continued on page 182)

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ing int. THE Twist DOES IT!

SHAKEPROOF LOCK WASHERS WITH THEIR TAPERED-TWISTED TEETH PROVIDE POWERFUL TRIPLE-ACTION LOCK!



External Tooth Lock Washers



Internal Tooth



Extra-Heavy Internal Tooth Lock Washers



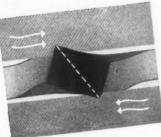
Countersunk Tooth Lock Washers



External-Internal Tooth Lock Washers



Dome Lock Washers



1. STRUT-ACTION

Each tapered-twisted tooth
bites into both surfaces, setting
up a strut-action which resists
any backward movement of
nut or screw.



2. SPRING TENSION
As vibration begins, the spring tension of the teeth forces them to bite deeper, maintaining an absolutely tight lock.



3. LINE BITE
The exclusive design of the taperedtwisted teeth assures a substantial line
bite at initial contact, immediately
producing a positive lock.

Let Shakeproof Engineers help you incorporate Shakeproof Lock Washers into your product. The vast field experience and fastening knowledge of these engineers will provide a valuable aid in speeding up your assembly. Write today and ask for this exceptional service.

The exclusive design features of Shakeproof Lock Washers, plus their uniform, dependable quality, has made them "The Standard of Locking Efficiency".

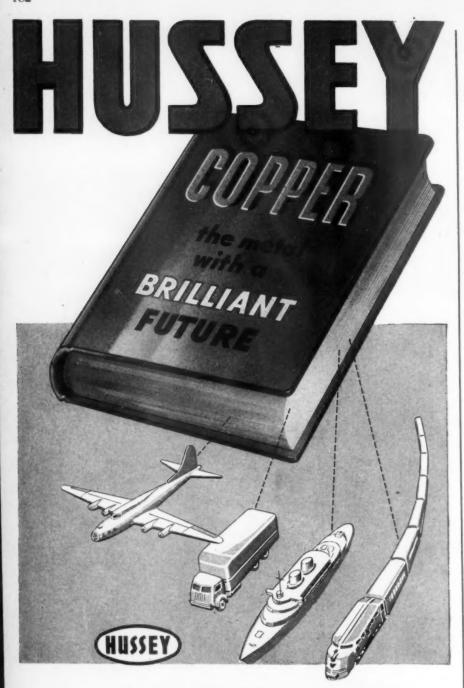


Distributor of Shakeproof Products Manufactured by ILLINOIS TOOL WORKS
2501 NORTH KEELER AVENUE, CHICAGO 39, ILLINOIS
Plants at Chicago and Eigin, Illinois • In Canada: Canada Illinois Tools, Ltd., Toronto, Ontario
Los Angeles Office
5670 Wilshire Bivd., Los Angeles 36, Cal.
2895 E. Grand Bivd., Detroit 2, Mich.



Free Sample Test Kit contains a variety of Shakeproof Lock Washers. Write today for Kit No. 21!

OTHER SHAKEPROOF PRODUCTS: Shakeproof Type 1 Thread-Cutting Screws for metals; Shakeproof Type 25 Thread-Cutting Screws for plastics; Sems Fastener Units, Pre-assembled Shakeproof Lock Washer and Screw; Shakeproof Quick Fasteners for immediate opening and locking.



TRANSPORTATION

In the post war era, wherever man travels, or world trade brings prosperity—there you will find Copper doing the jobs that no other metal can equal. There too, will be proven again, the superiority and outstanding dependability of Hussey Copper and Copper products. Hussey engineers armed with new developments in Copper will welcome the opportunity of cooperating with you now.

C. G. HUSSEY & COMPANY

(Division of Copper Range Co.) ROLLING MILL and GENERAL OFFICES: PITTSBURGH, PA. Warehouse Stocks in New York, Philadelphia, Cleveland, Cincinnati, St. Louis & Chicago Contact your nearest warehouse.

(Continued from page 180)

ident J. S. Wilkinson handed certain of the members slips of paper, each bearing the subject of a three-minute talk relating o the recipient's own business activities. H. A. Morton reports that "Pete Spiers of Modern Dairy spoke on "Homogenized Milk"; Harold Hargrave followed with "Tenderizing Hams"; Charlie Clark, Crescent Creamery in a talk on "Synthetic Tires" gave his company's experience with the new tires: John Tophy gave an interesting talk on molding sands; and Les Fewing of the National Laboratories gave a talk on "Varnish." A brief questions and answers period followed each presentation.

"This meeting was one of the most enjoyable we have ever held" writes Mr. Morton. "The subjects were of interest to every member. The speakers were familiar with their subjects and could answer all the questions. Members are more free in asking questions when the speakers are selected from within their own group.

EXECUTIVE NIGHT AT MEMPHIS

President Robert C. Swanton of the National Association, was guest speaker at the January 10 meeting of the Memphis Association of Purchasing Agents, at which 100 members and friends were in attendance. Mr. Swanton talked on "Free Enterprise and the Purchasing Agent." He was on a trip through the Southwest, speaking before ten of the Purchasing Agents Associations. He was accompanied by George H. Cole of Birmingham, vice president representing the Seventh District of the national association. In the brief business session following talks by the national executives. Larry Smith, Jr., Sefton Fiber Can Co., was appointed treasurer of the local assocation to succeed George Nelson of the Ford Motor Company. One new member was introduced at the meeting, namely C. B. Dennis, Purchasing Agent for the Chapman & Dewey Lumber Company.

NATIONAL OFFICERS AT **PITTSBURGH**

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The February meeting of the Purchasing Agents Association of Pittsburgh, held in the Hotel William Penn on the 20th, was dedicated to National Night, with President R. C. Swanton and Vice President Lee R. Forker of the National Association, as guests of honor. The former spoke on "Free Enterprise and the Purchasing Agent," and the latter spoke on "National Affairs."

In accordance with the association's bylaws, President J. H. Phillips, Pittsburgh Steel Co., appointed I. E. Walton, N. J. Crain and A. N. Johnston as members of a nominating committee, to present nominations for association offices and directorships for the ensuing year.

(Continued on page 184)

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> Keep on pouring out war supplies—

We'll keep the boxes coming your way to package—and deliver them safely to the fighting fronts.

and keep
on buying more
War Bonds!

GAYLORD CONTAINER CORPORATION . General Officer: SAINT LOUIS

CORRUGATED AND SOLID FIBRE BOXES . FOLDING CARTONS ... KRAFT GROCERY BAGS AND SACKS ... KRAFT PAPER AND SPECIALTIES

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City Seattle • Indianapolis • Houston • Los Angeles • Oakland • Minneapolis • Dallas Jacksonville • Columbus • Fort Worth • Tampa • Detroit • Cincinnati • Greenville Des Moines • Oklahoma City • Portland • St. Louis • San Antonio • Kansas City Memphis • Milwaukee • Chattanooga • Bogalusa • Weslaco • New Haven • Appleton





COMMINING CLOTHS RACKED SKINS SACKED BACKING CLOTHS inhhimm SAMINATING

CHICAGO, ILL. H. Rabin, 30 No. LaSalle St. LOS ANGELES, CAL.

8. Boyd Co., 743 E. 14th St.
PETERSBURG, VA.
A Bragg, 224 No. Sycamore St. PORTLAND, ORE. Boyd Co., S. E. Union & Morrison SAN FRANCISCO, CAL. A. B. Boyd Co., 1235 Howard St.

SEATTLE, WASH.

8. Boyd Co., 404 Dester Ave.

ST. LOUIS, MO.

C. E. Wilkins, 1402 Locus? St. WALLASTON, MASS. S. B. Scott, 123 Elm St CAPE TOWN, S. A. K. Stein Agency Co., 12 Plain St.

COATING LAMINATING QUICK SERVICE

ADHESIVE and chemical mix coatings expertly applied to paper, cloth, foils and other materials.

Fabrics backed, laminated or combined to your specifications, and special purpose formulas developed in our own Laboratory.

65 years of "Know-How" deliver "Use-Proved" tapes and backings deserving the enthusiastic approval they earn on the production lines.

Just tell us what your problem is and let our Laboratory, backed by their years of specialized experience in synthetics, help you find the perfect solution.

Let Mr. George L. Peters, E.M., Columbia 1911, head of our Engineering Staff, suggest from our formulas those experience indicates as best suited to your particular needs.

eters Bros. Brooklyn, N.Y. ESTABLISHED 3 GENERATIONS

'comeback' after

'doin' a stretch!"

No. of the Control of

Coil Spring Says: "I always make a

EXTENSION * TORSION FLATS * COMPRESSION WIRE FORMS

And we've made some long, tough stretches—that only the finest springs could endure. It's our specialty to build better springs, regardless of conditions affecting the job. Just give us a slant at your spring needs now-or postwar-and we'll make a comeback with your answer. Phone Michigan 6318.

THE U.S. STEEL WIRE SPRING CO.

7800 FINNEY AVE. • MICHIGAN 6318 • CLEVELAND

(Continued from page 182)

THE VETERAN COMES BACK SEATTLE, WASH.

The Purchasing Agents Association held its February meeting on the 8th at the Washington Athletic Club in Seattle, President D. P. Brewer presiding. Featured on the program were a talk by Commander Charles J. Frisbie, U. S. N. R., on "The Veteran Comes Back", and by Lars Carlson, Regional Director, Committee for Economic Development, whose subject was "The Activities and Objectives of C.E.D."

EDITH A. JOHNSON HEADS WASHINGTON WOMEN'S GROUP

Edith A. Johnson, Purchasing Agent, Pulp Company, Soundview Everett, Wash., was recently inducted as president of the Women Purchasing Agents Group, Purchasing Agents Association



Edith A. Johnson

of Washington, at a meeting in the Gowman Hotel, Seattle, Wash., January 12, succeeding Bernice J. Wood. Other officers installed are Anne Wahler, vice president, Mamie Fluent, treasurer, and Wilma White, secretary. Following the installation of officers, Harry McDonald, district manager, Birdseye-Snider, Inc., and Bert Hollister, Frozen Foods Department, Pacific Fruit and Produce Co., spoke on frozen foods, presenting a picture "New Foods Make News."

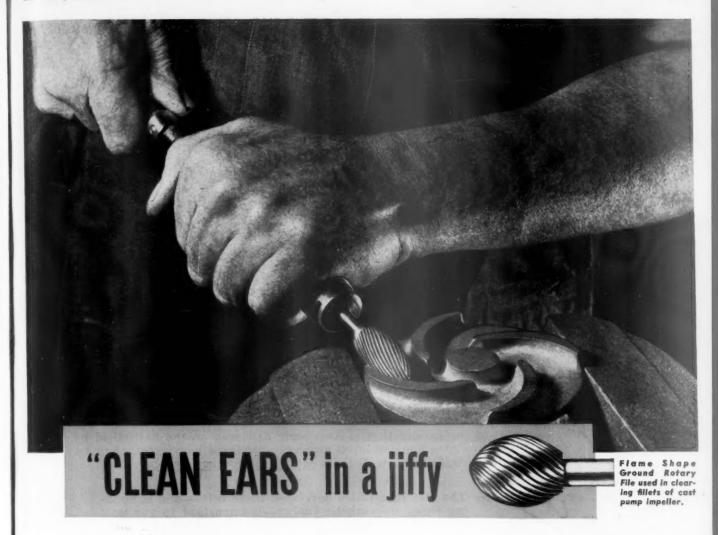
Retiring President Wood advises that the Women's Group is progressing in activities and numbers, and now has a total of 19 active members and nearly as many associate members.

100 MEMBERS GOAL OF FLORIDA ASSOCIATION

Lawrence Ashley, purchasing agent for the Merrill-Stevens Dry Dock & Repair Co., Miami, Fla., chairman of the Membership Committee of the newly organized Purchasing Agents Associa-tion of Florida states that his committee is shooting for 100 members by May when the association plans to apply for membership in the National Association of Purchasing Agents.

Through the efforts of Chairman Ashley and his co-workers, J. L. Watson,

(Continued on page 188)



ROTARY filing solves many production problems in getting at places otherwise difficult to reach. Die sinking, metal pattern making, tool making, mold finishing, and the finishing of small and intricate parts frequently present such problems.

In such work, rotary files are extensively used for breaking and chamfering corners, removing burs and fins, cleaning, enlarging and elongating holes and slots; also for removing scale from aluminum, brass, bronze and iron castings.

It is fitting that Nicholson's vast experience in file making should become of service to industry in connection with rotary

as well as other types of files. You may be sure that Nicholson Rotary Files will always be of the highest quality standard and that the Nicholson recommendations will be earnest and unbiased.

WRITE FOR CATALOG AND PRICE LIST

-and for any special information you desire.

For deliveries, consult your mill-supply house.

NICHOLSON SELLS BOTH HAND CUT AND GROUND types of Rotary Files—each in 16 standard styles or shapes; in 3 cuts (Coarse, Medium and Fine); in diameters of 1/s" to 2".



HAND CUT GROUND

NICHOLSON FILE CO. • 92 ACORN STREET, PROVIDENCE 1, R. I.
(In Canada, Port Hope, Ont.)

NICHOLSON ROTARY FILES

HAND CUT and GROUND FOR EVERY PURPOSE



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Just GATES Synthetic Rubber V-Relts

—are **TODAY** Giving **BETTER SERVICE**

When our Army's tanks, tractors and self-propelled big guns ing built, it was found that no V-Belts built by anyone before could stand the service that is now being delivered on the batt. V-Belts that Gates has developed especially for these heavy come and Gates is building these V-Belts entirely of synthetic rubber.

* The fact that Gates developed these helding them of synthetic rubber.

* The fact that Gates developed these helding them of synthetic rubber. When our Army's tanks, tractors and self-propelled big guns were being built, it was found that no V-Belts built by anyone before the war could stand the service that is now being delivered on the battlefield by V-Belts that Gates has developed especially for these heavy combat units.

The fact that Gates developed these belts-and is building them of synthetic rubber—is important to you now because every improvement developed by Gates for these Army belts has also been added, day by day, to the quality of the Standard Gates Vulco Ropes which are being delivered to you.

As you know, wartime improvements in many other products must be withheld from general use until after the war is won—but victory depends so directly upon production, and production so directly upon V-Belts which drive the producing machines, that Gates has been able to give you immediately in your Standard Gates Vulco Ropes, every V-Belt improvement which Gates specialized research has developed for use on the Army's motorized equipment.

These are the simple reasons why you are finding that your Standard Gates synthetic rubber Vulco Ropes are today giving you better service than any V-Belts that were ever built before the war.



THE GATES RUBBER COMPANY

Engineering Offices and Jobber Stocks in All Large Industrial Centers

CHICAGO 6, ILL 549 West Washington. NEW YORK CITY 3, 215-219 Fourth Avenue ATLANTA 3, GA., 738 C. 6 S. National Bank Bldg. LOS ANGELES 21, CAL., 2240 E. Washington Blvd. DENVER 17, COLO., 999 S. Broadway DETROIT 4, MICH., 8663 Grand River Ave. DALLAS 2, TEXAS, 1710 N. Market St. SAN FRANCISCO 3, CAL. 1090 Bryant St. PORTLAND 9, ORE., 333 N.W. 5th Ave.

FUTURE OF
SUPERIOR
STAINLESS STEEL

SKY-BORNE CARGO CARRIERS

built of Stainless Steel!

The larger, faster, longer-lived freight planes of tomorrow will spread stainless wings

over America and the world . . . flying high-value cargoes of peace . . . fabricated

of gleaming stainless steel for greatest strength and durability. Important in this pica

is Superior Stainless Strip, as welded tubing, in vital airframes and for fittings and trim

throughout these coming ships.

High Tensile, Heat Resisting, or Drawing Quality as required.

SUPERIOR STAINLESS STRIP STEE

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MARCH

HOLO-KROME fibro forged SOCKET SCREWS

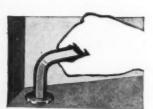
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▼ EXCLUSIVELY HOLO-KROME



GUARANTEED UNFAILING PERFORMANCE

is the Holo-Krome assurance to users of H-K FIBRO FORGED Socket Screws -the Completely Cold Forged Screws . . . The advice and counsel of Holo-Krome Fastening Engineers is of concrete value to them in speeding their present production schedules and in planning for tomorrow . . . GUAR-ANTEED UNFAILING PERFORMANCE plus Holo-Krome Quality and uniform accuracy are some of the reasons why they specify "HOLO-KROME" . . . Yes, Users like Holo-Krome Socket Screw Products!



QUICK & POSITIVE INTERNAL WRENCHING

THE BETTER

THE HOLO-KROME SCREW CORP. HARTFORD 10, CONN. U.S.A

(Continued from page 184)

Florida Power Corporation, St. Petersburgh; Van Cob, Orlando; Harold Bea, Jacksonville, and W. W. Russell of Foley, Fla., applications of 25 new members were submitted and approved at the January 17 meeting of the new association, which now has a membership of 43 bona-fide members.

At this meeting, which was held in Jacksonville, Fla., Dr. Russell Forbes, former Commissioner of Purchases, New York City, addressed the gathering. He gave a very interesting talk on purchasing in general, and centralized purchasing for state and local governments. He declared that Florida, one of the nine remaining states without centalized purchasing, should enjoy the advantages of centralized procurement, and suggested that the local association promote program for Florida.

E. P. Danese, president of the Florida association states that centralized purchasing is a very warm subject at present in the state capital at Tallahassee as the result of an eye-opener survey being conducted by an economics expert retained by the Governmental Research on Economy, State Planning board. Mr. Danese has personally been active in instituting a state centralized purchasing bureau, his interest in the subject being especially whetted, he states, by the series of articles in Purchasing Magazine by Miss M. E. O'Connor on "Spending and Saving the People's Money." He prepared a pamphlet on the subject, and took it upon himself to interest the Governors office on the advantages to be gained through the establishment of a central purchasing department.

A committee of three, consisting of Matthew Richards of Tycoon Tackle Co., Miami; A. E. Johnson, Plymouth Citrus Exchange, Plymouth; and J. L. Watson of St. Petersburg, was appointed to give careful study to the question of whether or not the association should concern itself with the problem insofar as the State of Florida is concerned. If the committee returns a report in favor of such action, Mr. Danese states it is the intention to give wholehearted sup-

port to the movement.

GEORGE RENARD GUEST OF LEHIGH VALLEY ASSN.

Executive Secretary George A. Renard of the National Association spoke on fundamental thinking on business problems at the January 23rd meeting of the Lehigh Valley Purchasing Agents Association at the Bethlehem Elks Club, Bethlehem, Pa. Mr. Renard urged that Purchasing Agents keep alert to the daily changing conditions and guide their course accordingly, presenting a decalogue for the guidance of purchasing agents, which included: Know your company, know your product, know your business, be honest, sincere, fair on commitments, keep promises, get orders to your company's advantage, watch your conduct

(Continued on page 190)

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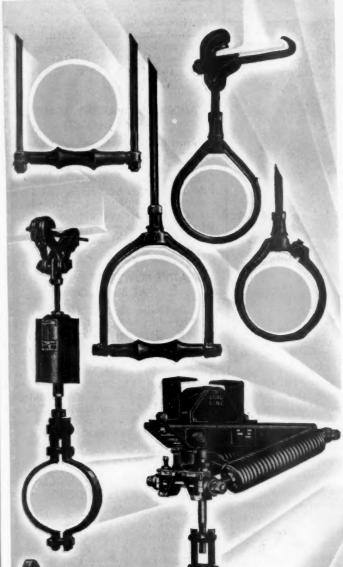
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PIPE HANGERS AND SUPPORTS



for any piping anywhere

For any piping installation, from a simple water pipe to a high pressure, high temperature steam line, there is a stock Grinnell Hanger.

Grinnell Hangers will save you valuable engineering time and assure:

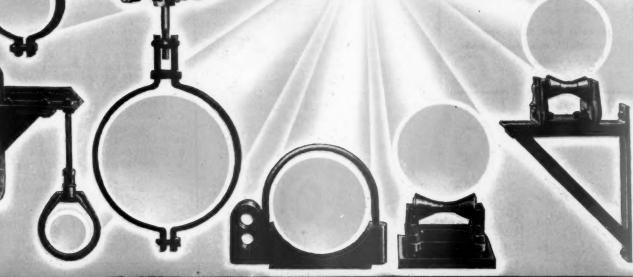
Faster Installation Easy Adjustment during and after pipe erection **Full Provision for thermal movement Easy Maintenance** Compliance with all piping code requirements

Don't try to get by with makeshift or unreliable hangers - call on Grinnell for engineered hangers to meet your requirements exactly.

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BRANCH WAREHOUSES

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"Part of the Product" Plan

GENERAL Engineered Shipping Containers are designed to the product. Frequently the product and the container come off the production line together—as a unit.

Result: You save space, materials, man-hours and packing costs.









ENGINEERED SHIPPING CONTAINERS

General BOX COMPANY

GENERAL OFFICES: 48 West Illinois St., Chicago, Ill. DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, rolt, East St. Louis, Kansas City, Louisville, Milwaukse, w Orleans, Shebeygan, Winchendon.

ntal Box Company, Inc.: ston, Dallas.

Says you: Aren't you taking liberties with me . . . putting it on a bit thick, as it were, with this monkey business?

Says me: Perhaps we are-but the old man IS proud of the little one . . . just as you, too, are mighty proud of your product-proud of what it will do; proud of its better engineering and design. And we believe you'll want to put that product in an engineered shipping container. There are many good reasons:

GENERAL Engineered Shipping Containers are designed especially for the product-as Part of the Product. They're compact, lightweight, extra-strong, and shipworthy! They cut costs, save space, and substantially speed production.

Be sure to include GENERAL Containers in your postwar packing plans. Our engineers will be glad to provide complete information-just write today.





ral Nailed Box



Send for your copy of "The General Box." It illustrates our "Part of the Product" Plan.

(Continued from page 188)

and be loyal to your company.

B. C. Sawyer of the Bethlehem Fabricators, Inc., Bethlehem, was chairman of the meeting. At a short business session, President C. F. Fehnel, of Nazareth, appointed the following committee to revise the by-laws: G. L. Baumgartner, Allentown; G. M. Overfield, Bethlehem, and H. R. Chidsey, Easton.

AMERICA'S WARTIME LEADERS SAN FRANCISCO

"America's Wartime Leaders" was the subject of an address by Robert R. Gros at dinner meeting of the Northern California Purchasing Agents Association, held at the Hotel St. Francis, San Francisco, January 18th. Mr. Gros based his talk on interviews with national and international leaders, military figures and prominent industrial executives.

CREATIVE POWER OF ENJOYMENT AT BUFFALO

R. B. House, dean of administration, The University of North Carolina, Chapel Hill, N. C., spoke on "The Creative Power of Enjoyment" at the February meeting of the Purchasing Agents Association of Buffalo, held at the Hotel Lafayette on the 14th. The association held its annual dinner dance at the Buffalo Trap & Field Club on January 27th, at which over 65% of the members and their wives and sweethearts were in attendance.

1 1 1 ATTORNEY GENERAL BIDDLE SPEAKS AT PROVIDENCE

Attorney General Francis Biddle, Washington, was feature speaker at a meeting attended by some 400 members of the Rhode Island Purchasing Agents Association and their guests, at the Narragansett Hotel, Providence, R. I., January 22nd.

In the course of his talk he said that the Government had been strongly criticized "for anti trust enforcement in the railroad cases and insurance cases," but contended that the Department of Justice was simply endeavoring to clear trade channels for free competition.

He declared that in the postwar period, the United States must face "increased concentration of power in a few great industries." Monopolies and cartels, he said, mean inevitably "Government regulation to a high degree, for I don't believe any society will permit business to fix prices where competition has disappeared.

In the course of his talk he said "You hear a good deal about disunity in Washington." That disunity is largely an illusion, but after all, rows are more interesting to the press than cooperation. I believe there is more real unity among Republicans and Democrats, labor and industry, East and West, North and

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and and Wanta be really proud of those brain children of yours? Proud because the equipment you're designing is cleaner cut, less expensive, more compact, more flexible. Proud because you know you're able to do a better job.

Well we can help you, just as we've helped thousands of other engineers like you. Helped them do a better job because we could furnish a power drive that fit the job exactly.

For example, look at the motor drives on this welding positioner. These units incorporate a motor, a gear reduction and an electrically operated brake . . . all arranged for sidewall mounting. All of these . . . the motor, the gear reduction and the electric brake . . . all are standard Master units, that easily combine into one compact, integral, power package. Saves ordering and mounting time . . . saves space . . . saves money.

Probably you will not need exactly this same combination, but the Master line includes motors for every current specification, every type of enclosure, and every type of mounting arrangement . . . in fact, is the most flexible, the most versatile line of motor drives in the world.

Investigate Master's unusual ability to serve you economically with motors that really fit the job in sizes from 1/10 to 100 HP.

THE MASTER ELECTRIC COMPANY . DAITON I, OHIO

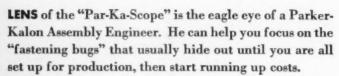
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MARCH

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Pan-Ka-Sco

find the "FASTENING BUGS" NOW avoid COSTLY CHANGES LATER

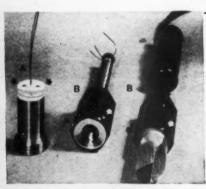


THE "BUGS" may be needless tapping, slow bolt-and-nut assembly, costly inserts in plastics that slow up molding, riveting in hard-to-reach places. Whatever they are, he'll help you find them now, when a changeover to the short-cut fastening method . . . with P-K Self-tap-



ping Screws . . . requires only a little pencil work. SAVINGS OF 30% to 50% are the common experience of thousands of manufacturers who have adopted this short cut method of assembling metals or plastics.

THE P-K ASSEMBLY ENGINEER'S advice is unbiased. He'll recommend only the best Self-tapping Screw for the job-Parker-Kalon makes all types. Tell us when you'd like him to call, or send details of fastening jobs for recommendations.



THIS MANUFACTURER FOUND A MILLION "TAPPING BUGS"... FIND YOURS NOW!

By switching to P-K Type "U" Drive Screws in assembly of Hexacon Soldering Irons, the Hexacon Electric Co., Roselle, N. J., eliminated a million tapping operations a year formerly needed for machine screws. Time saving is more than 25%. Fastening is better, stronger than when machine screws (and before that, taper pins) were used.

In application (B), the heads of the Type "U" P-K Screws are ground off after they are driven, making a permanent, tamper-proof fastening.



GET THIS GUIDE-IT'S FREE

The P-K "Users' Guide" describes all types of Parker-Kalon Self-tapping Screws, and tells where and how to use them. Arranged so you can find the facts you need quickly. Write for it. Parker-Kalon Corp., 208 Varick St., New York 14, N. Y.



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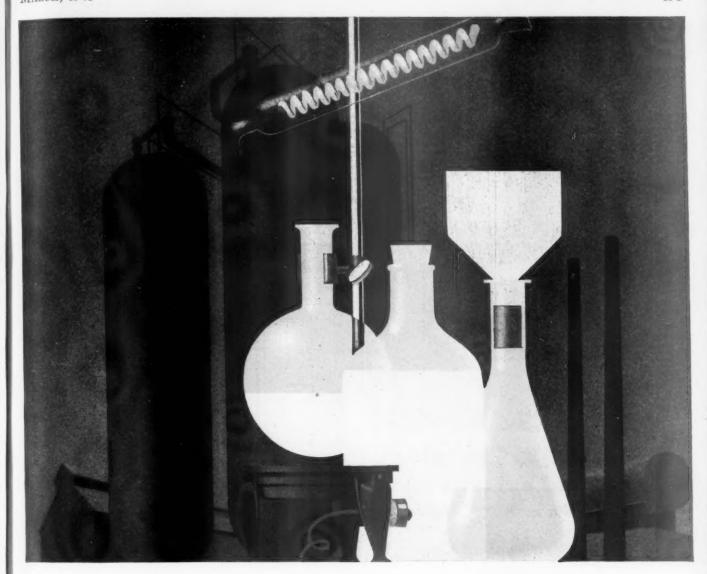
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STAINLESS STEEL... METAL Par-excellence FOR THE PROCESS INDUSTRIES

MERITS OF ALLEGHENY METAL

★Highly corresion and heat-resistant

★Easy to form and weld ★Easy to clean and

*Requires little

*Low depreciation

THERE are a lot of new faces along the street—high-octane gas, synthetic rubber, magnesium, dehydrated foods, war chemicals and explosives, just to name a few.

But Allegheny Metal kept pace—with new grades, new techniques to meet the requirements for processing these products. There was the need for high resistance to chemical attack, and to oxidation at heat—the need for great strength, long life, easy cleaning and freedom from contamination—requirements, all of them, that stainless steel answers best.

If—somewhere along the line in the manufacture of food and dairy products, drugs and chemicals, oil and plastics, textiles and paper—your plans would be profited by a steel with Allegheny Metal's special qualifications, let us help you develop them. Allegheny Ludlum Steel Corporation, Brackenridge, Pa.

Allegheny Metal is also handled and stocked by all Joseph T. Ryerson & Son, Inc. warehouses

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ALLEGHENY METAL

The Time-Tested Stainless Steel



REMEMBER THE NAME TODAY FOR THE NEEDS OF TOMORROW



Excessive heat, corrosion and vibration require an exhaust unit that is *durable*. Gas engines, especially, demand a Rex-Flex lined exhaust unit to best withstand these destructive forces.

A Rex-Flex stainless-steel unit was used in the above installation, since ordinary steel is more readily affected by corrosive action—caused by acidulated condensation during shut-down periods. Through the use of a lined Rex-Flex exhaust unit, a smooth bore flow was obtained

-undesirable back pressures were avoided and longer unit life was assured. Flexibility was increased also, due to the Rex-Flex method of attaching the liner, which allows complete freedom of axial and radial motion within specified limits.

No matter what your exhaust connector needs are—now or in the future—you can increase operating life and efficiency with Rex-Flex Stainless-Steel lined exhaust units. Send your installation requirements to our Engineering Department—now.

Flexible Metal Hose for Every Industrial Use



Plants: Maywood and Elgin, III.

(Continued from page 190)

South than we have almost ever had. The thing to do is to hold that strength and that unity for the tremendous years that are going to follow our victory."

Other speakers at the meeting included U. S. Senator Theodore Francis Green, Gov. J. Howard McGrath, Mayor Dennis J. Roberts of Providence, F. Albert Hayes, former president of the N. A. P. A., and W. A. Traver, president of the Providence Chamber of Commerce. Franklyn A. Adams, State purchasing agent and first vice president of the Rhode Island association, acted as toastmaster.

ANNUAL LADIES NIGHT MONTREAL

The Purchasing Agents Association of Montreal held its Annual Ladies Night in the Salle Doree, Mount Royal Hotel, Montreal, February 20th, an enjoyable affair, members being guests of the association. Also, members of the purchasing class conducted by John Crawford at Sir George Williams College were guests of the association, the successful candidates being awarded prizes and diplomas. Mr. Crawford is chairman of the association's committee on education. H. H. Howlett is chairman of the entertainment committee.

PURCHASING COURSE AT SAN FRANCISCO

The Northern California Purchasing Agents Association opened a 1945 course in "Principles and Practices of Purchasing" with Prof. Royal A. Roberts of the University of California School of Business Administration as director. The classes commenced January 23rd and are held weekly.

POSTWAR AIR SERVICE ROCHESTER BUYERS

J. C. Freeman, traffic manager of the American Air Lines addressed the January 17 meeting of the Rochester Association of Industrial Buyers at the Chamber of Commerce. Mr. Freeman stated that though commercial aviation has been more or less at a standstill due to the war, that the field of postwar aviation will be tremendous. He expressed the opinion that jet propulsion and radar will play an important role in postwar aviation.

He explained that the air lines today are using a plane similar to the Douglas DC-3 for passenger, air express, and air freight service, stating that the trend in the future would be toward larger planes which will be used to give service on regular routes between large cities which in turn will receive traffic from feeder lines of smaller planes serving the area surrounding them.

He expressed the opinion that rates and schedules will be changed, looking

(Continued on page 196)



MARCH, 1

(Continued from page 194)

to lower rates and faster and more frequent schedules. He stated that the use of air express and air freight would be increased, citing as an example air-transport of spinach from California to Ohio, and the shipment of ready-to-wear dresses from New York to Dallas, Texas.

Mr. Freeman said that sales and purchasing departments should think of transportation in terms of hours instead The distance between New of miles. York and Moscow, for instance, is only 22 hours; New York and Brisbane, 38

PLASTICS - NEW DEVELOPMENTS PHILADELPHIA FORUM

Lieutenant Fred Warner of the U.S. Army spoke on the very interesting subject "The Japanese Soldier" at the February 8th dinner meeting of the Purchasing Agents Association of Philadelphia at the Bellevue-Stratford Hotel.

"Plastics-New Developments and Post War Prospects" proved an interesting subject at the preceding Forum Meeting the speaker being E. K. Stilbert of The Dow Chemical Company.

DIVERSIFIED SUBJECTS AT PORTLAND LUNCHEONS

Whether or not members of the Purchasing Agents Association of Oregon enjoy a diversified food diet at their weekly luncheon meetings, is difficult to say, but they certainly are presented with a widely differing mental diet. At the January 19 luncheon, they were addressed by Arthur M. Greenhall, Curator of the Portland Zoo; at the January 26 meeting Ben Hazen presented a talk entitled "Ralph Waldo Emerson Was Mistaken", and at the February 2nd meeting, K. P. Kwan, attache of the Chinese consulate spoke on "Chinese Post War Trade." At the stated monthly dinner meeting held on the 15th, L. A. Nelson of the West Coast Lumberman's Association conducted the association's second educational meeting on the subject of lum-

1 1 1 POST WAR DOLLARS SALT LAKE CITY

Orval Adams, former president of the American Bankers Association, was guest speaker at the January 11th meeting of the Purchasing Agents Association of Utah, at Salt Lake City, presided over by Vice President Ray Close.

Being well versed in the nation's price and money problems, Mr. Adams plucked a subject right from the treasury till-Postwar Dollars. "Next to winning the war and casting aside totalitarian controls," said Mr. Adams, our vital problem will be to balance the budget and establish, once again, sound American

(Continued on page 200)



It's the "know-how" in designing,\ engineering and precision manufacturing gained through 25 years of continuous production and constant refinement of more than two million Briggs & Stratton 4-cycle engines that have earned for them recognition as the world's finest, most dependable, air-cooled gasoline engines.

Air-Cooled Power



This "know-how" is available to manufacturers of all types of appliances, tools and equipment, requiring dependable, compact gasoline power. The durability, easy-starting, and economical performance of Briggs & Stratton engines — plus dealer and consumer preference — make them "preferred power" everywhere. BRIGGS & STRATTON CORP., Milwaukee 1, Wisconsin, U. S. A.

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Why IT'S USED BY PAINTERS EVERYWHERE!

... THE NEW SCIENTIFIC BRISTLE FOR A BETTER PAINT BRUSH



HOLDS MORE

Each Neoceta bristle is channeled to hold more paint. High carrying capacity. Fewer dips. Less Fatigue.



SPREADS BETTER

Neoceta bristles brush out well, Carry and spread paint evenly over max-Imum area. Not limp. Not too stiff.



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High capacity—perfect balance plus fewer dips-less effort. Light stroke -little brushing.



FINER FILM

Perfectly tapered Neoceta bristles lay paint smoothly.



LONG LIFE

Neoceta stands up under hard service. May be used in all oil, casein and water paints, varnish base enamels, varnishes and shellac. Cleans easily.

WORTHY COMPANION OF THE FAMOUS Gold Stripe BRUSHES

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OYEARS RESEARCH

brush is six years of scientific research four years of actual use by master painters from coast to coast. Send for the scientific facts in the booklet 'The Fascinating Story of Neoceta".

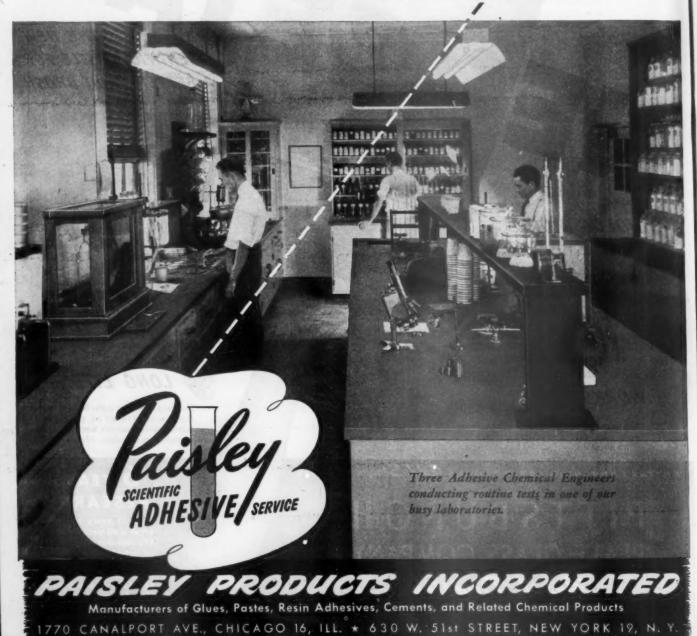
REPRESENTATIVE LINE OF NEOCETA BRUSHES NOW AVAILABLE - SEE YOUR NEAREST "PITTSBURGH" BRANCH

DON'T JUST BUY A DRUM OF GLUE.. BUY

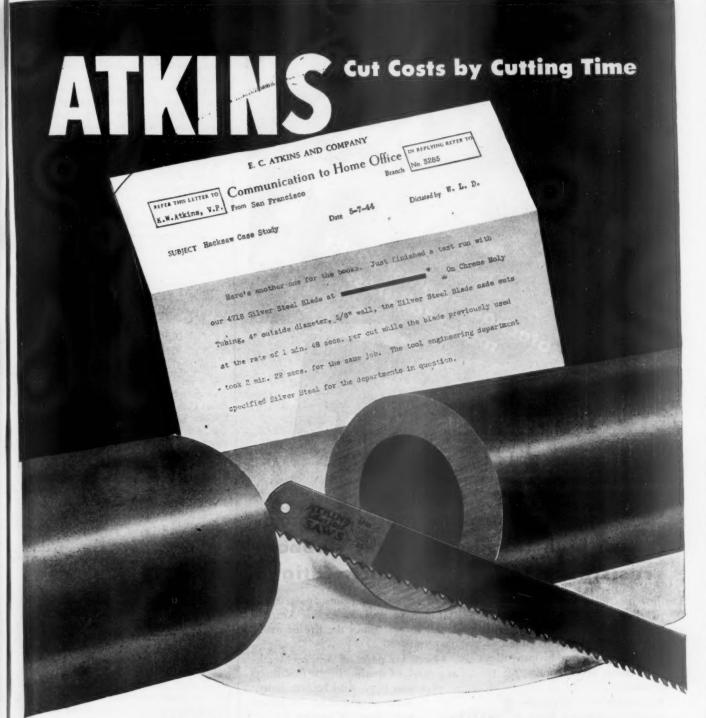


SEND FOR this Adhesive Problem Data Sheet. It's your guide to getting the ONE best, most efficient adhesive for the specific operation you describe. Trial shipment will be sent ON APPROVAL if desired. If you are not entirely satisfied, we'll gladly cancel the invoice. This skilled laboratory service does not obligate you. It's the SURE... the modern way to buy adhesives.

RULE-OF-THUMB methods no longer apply to the purchase of good Adhesives. The risk is far too great! Speedy, modern, adhesive operations require all the scientific skill and efficiency. all the facilities and control that Paisley service gives. Instead of delivering "just a drum of glue", Paisley sends you an Adhesive designed to perform the one specific bonding operation with the greatest possible speed and efficiency! Every factor affecting that operation is studied by our capable laboratory staff. The correct formula is then established and periodically checked for viscosity, body, storage life, machinability, emulsion stability, uniformity of color and cohesive spread and other properties. Don't take chances with YOUR production. Stop interruption losses due to faulty Adhesives. Decide NOW, to entrust ALL your Adhesive requirements to this one big reliable source.



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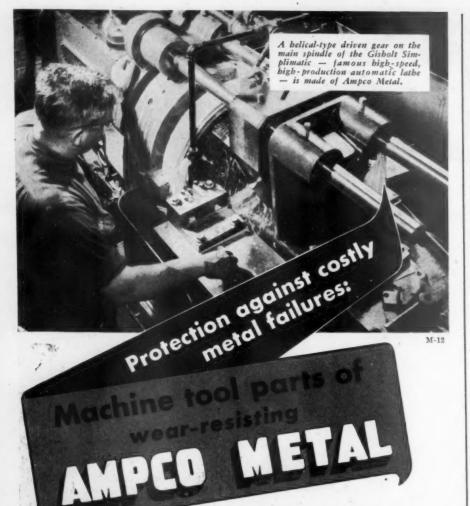
During these war production years, the emphasis has been on production—getting out "enough and on time." With men's lives at stake, costs were secondary. But now industry realizes that many of the same tools used to increase output point the way to substantially lower costs as well.

*Prominent western aircraft manufacturer.
Atkins Metal Cutting Saws have won notable distinction throughout this great industry.

Atkins Silver Steel Blades are a case in point. By permitting faster cutting rates, they reduce the cutting cost per unit. By making more cuts per blade, they reduce tool costs as well as the unproductive time spent in tool change-overs. Further proof of these points — and a job demonstration are available on request.

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provide controlled hardness; high tensile strength; stubborn resistance to wear, impact, fatigue

Leading machine tool builders (over 90 of them) protect you against breakdowns at vital frictional points by using parts of Ampco Metal a series of aluminum bronze alloys tailor-made to severe operating requirements.

The controlled physical properties - varying from ductile and soft to rigid and hard, but having in common two prime characteristics: high strength and unsurpassed resistance to wear - give Ampco Metal several times the life of ordinary bronzes.

Check for parts of Ampco Metal, as a mark of quality in the machines

you buy. And replace worn parts of your older machines with durable Ampco.

Send for "File 41 - Engineering Data Sheets." Use the coupon below.

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(Continued from page 196)

currency as the cornerstone of democracy. Answering his own question of "How to do it?" he stated that as a prerequisite to all else, this government must make good its loan promises. After that we can promote solvency education, place again the nation's spending policy in a truly representative House and competent Treasury Department. Competitive government loans must be discontinued, and for the good of the people as well as the states, relief must be taken out of politics.

In conclusion Mr. Adams stated in effect that the cost of the war to the United States is money well spent in view of the cause. Uncle Sam's money is the only sound money today but it is fast approaching a fiat status. To prevent national chaos, we must act now, he

At the conclusion of the banker's talk, various committee reports were heard.

DISCUSS PLASTICS AT CHICAGO MEETING

"Plastics" were discussed at the February 8 meeting of the Purchasing Agents Association of Chicago held at the Sherman Hotel, the speakers being E. W. Cronin and S. P. Miller, specialists in the research and engineering departments of the plastics division of E. I. duPont de Nemours Co. The speakers explained the physical and chemical characteristics of various plastics in the thermosetting and thermoplastic groups, demonstrating with samples some of the services that plastics can and cannot be expected to render.

1 1 1 U. S. WAR ORGANIZATION OFFICES IN CHICAGO

Fifty-four separate war agencies now have offices in the city of Chicago, according to a directory just prepared by the War Problems Service Department of the Chicago Association of Commerce. The directory, which lists the agencies, the war problems and controls with which they deal, and the names of their key personnel, has been compiled by the Association to aid Chicago firms in their relations with the government. The 48page directory is divided under the following seven main headings:

Production and distribution agencies; surplus disposal offices; procurement agencies; manpower agencies; veterans agencies; housing agencies; miscellaneous agencies, including the Department of Commerce, Federal Bureau of Investigation and the American Red Cross. The national housing agencies have been expanded into a separate section in the

new edition.

A brief resume of the functions of each listed agency is included in the directory to aid business firms in determining the proper agency for them to contact.

(Continued on page 202)

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• Just a hint of a blaze in a flammable liquid...and a Kidde built-in system goes into action fast. A blanket of carbon dioxide covers it like a candle-snuffer...out goes the flame before it can spread!

Fast fire-killing is just part of the Kidde method. The "after it's out" advantages are equally outstanding. The dry, inert gas leaves no mess to be cleaned up—keeps the liquids themselves uncontaminated, undiluted.

Against electrical fires, Kidde systems are equally fast, equally safe. Fast, because carbon dioxide quickly penetrates wiring and windings. Safe, because there's no water-soaking of equipment or rotting of insulation.

Class B fires in flammable liquids, Class C blazes in electrical equipment... these are the *tough* fires to fight. The ones against which ordinary water-type extinguishers are useless. But the ones for which underwriters specifically approve Kidde equipment.



Before one of these hard-to-fight fires gets a chance to damage your plant, study the accompanying list of danger points. Then ask a Kidde representative how best to protect them.

Kidde Kills Tough Fires

PROCESS ROOMS
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THE WORD "KIDDE" AND THE KIDDE SEAL ARE TRADE MARKS OF WALTER KIDDE & COMPANY, INC.





HIGH PRAISE is due purchasing agents in industry for the fine work done to assemble needed materials for the conduct of the war.

Indeed the pen is mightier than the sword because without intelligent requisitioning of materials the war effort would be hampered.

For example, the specifications of NO-OX-ID for protecting polished surfaces against rust damage in shipment or in repair depots has greatly facilitated field repairs to trucks, tanks, and armored vehicles. Each replacement part which has had NO-OX-ID treatment arrives rust-free and ready for instant use upon removal from its package.

Protect your products from the ravages of rust

NO-OX-ID offers double-barreled protection ... the compound for coating parts to prevent corrosion—the NO-OX-IDized Wrapper to exclude moisture and corrosive elements.

This combination protects against salt air, humid atmosphere, acid fumes, desert sand, and all other corrosion accelerators. If you do not have all of the data about NO-OX-ID in your files, write to us.



THE ORIGINAL RUST PREVENTIVE

Dearborn Chemical Company
Dept. AA, 310 S. Michigan Ave., Chicago 4, Ill.
New York • Los Angeles • Toronto

(Continued from page 200)

COMMUNITY DISCUSSIONS HOLD INTEREST AT WARREN, PA.

The Purchasing Agents Association of Northwestern Pennsylvania held its monthly dinner meeting at the Carver Hotel, Warren, Pa., February 1st. The program included a commodity discussion on steel led by G. A. Carlson of the Pennsylvania Furnace & Iron Co., Warren, Pa.; containers, by H. L. Kaness of the Knox Glass Bottle Associates, Oil City, Pa.; and commercial trucks, by L. W. Jervis of the Kendall Refining Co., Bradford. At the conclusion of the program representatives of the Carnegie-Illinois Steel Corp. showed a motion picture on the construction of the San Francisco-Oakland Bay bridge.

NATIONAL OFFICERS SPEAK AT CINCINNATI

President R. C. Swanton of the National Association, and Vice President Lee R. Forker, Sixth District, were guest speakers at the February 22nd meeting of the Cincinnation Association of Purchasing Agents, held at the Hotel Netherland Plaza.

MILWAUKEE ASSOCIATION GUESTS OF ALLEN BRADLEY COMPANY

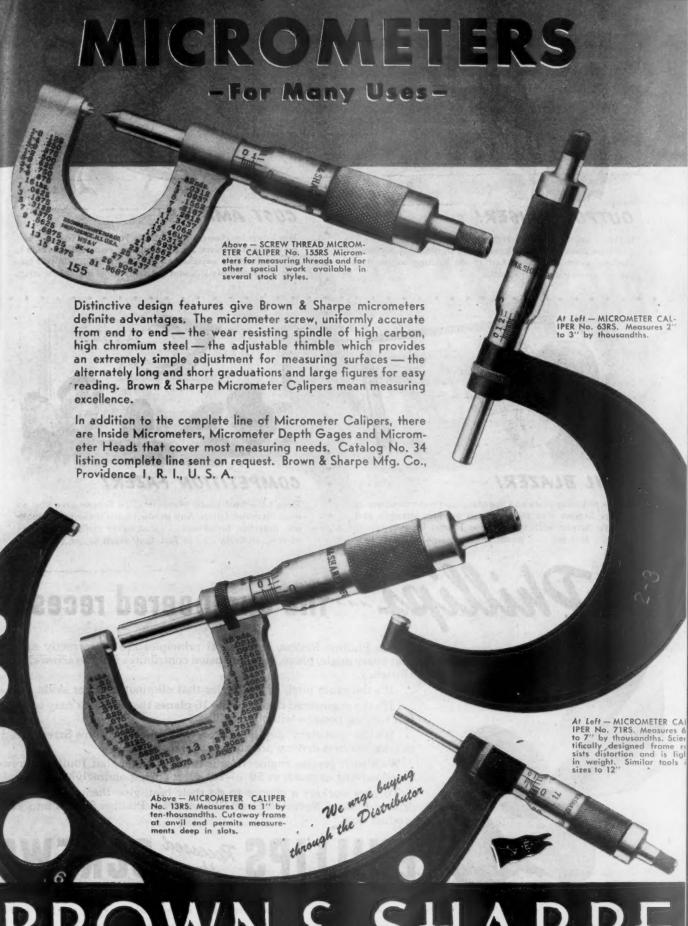
Members of the Milwaukee Association of Purchasing Agents were guests of the Allen-Bradley Co., Milwaukee, for their February meeting which was held on the 13th at the Allen-Bradley plant. The dinner and program which were under the direction of Theron Child were featured by pictures of one of the thrilling Green Bay Packers' games, following which the Allen-Bradley basketball team played a fast game with another industrial team.

The association's Educational Committee began a new semester on February 8th with Ray Geisler, sales manager of the Eclipse Moulded Products Co., giving a talk on the use of plastics. On February 15th there was a sound film provided by the U. S. Steel Corporation showing the making of steel. February 22nd, the meeting was featured by the showing of a sound film on abrasives through the courtesy of the Norton Company. March 1st, a speaker from the Wisconsin Telephone Company gave an interesting talk on telephone efficiency and voice.

DISCUSS NATIONAL ASSOCIATION REPORTS AT SPRINGFIELD

B. F. Downey reports the January 24th meeting of the Springfield Branch of the N.A.P.A. held at the Shawnee Hotel, Springfield, Ohio, consisted of a general and highly interesting discussion of national affairs, based on reports issued by Drs. Haney and McGill through the National Association.

(Continued on page 206)



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BROWN & SHARPE TOOLS

MARCH,



OUTPUT RAISER!

It puts a crimp in production to drive screws by hand . . . and then have to file off burrs. But that's what a certain washing machine maker had to do as long as he used slotted screws inside his tanks.

.



COST AMAZER!

But when he changed to Phillips Recessed Head Screws, he eliminated burrs. And no longer having driver skids to worry about, he switched to power driving . . . upped output tremendously . . . and got truly amazing cost-savings.



TRAIL BLAZER!

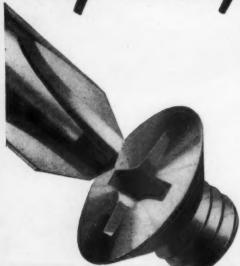
Besides reducing costs and speeding up production, use of Phillips Screws also shows up in product strength and rigidity. Screws with the Phillips Recess help designers plan . . . and get . . . much stronger, tighter fastenings.



COMPETITION FAZER!

Here's the final place where Phillips Screws give you an edge on competition. Any product with these better-looking, burr-free fastenings . . . that never disfigure surfaces or snag clothing . . . is just that much easier to sell!

It's Phillips the engineered recess!



In the Phillips Recess, mechanical principles are so correctly applied that every angle, plane, and dimension contributes fully to screw-driving efficiency.

... It's the exact pitch of the angles that eliminates driver skids.

... It's the engineered design of the 16 planes that makes it easy to apply full turning power – without reaming.

... It's the "just-right" depth of recess that enables Phillips Screw Heads to take heaviest driving pressures.

With such precise engineering, is it any wonder that Phillips Screws speed driving as much as 50% – cut costs correspondingly?

To give workers a chance to do their best, give them faster, easier-driving Phillips Recessed Head Screws. Plan Phillips Screws into your product now.

PHILLIPS Recessed SCREWS

WOOD SCREWS . MACHINE SCREWS . SELF-TAPPING SCREWS . STOVE BOLTS

Made in all sizes, types and head styles

24 SOURCES

American Screw Co., Providence, R. I.
Atlantic Screw Works, Hartford, Conn.
The Bristol Co., Waterbury, Conn.
Central Screw Co., Chicage, III.
Chandler Products Corp., Cleveland, Ohio
Centinental Screw Co., New Bedford, Mass.
The Cerbin Screw Corp., New Brittain, Conn.
General Screw Mfg. Co., Chicago, III.

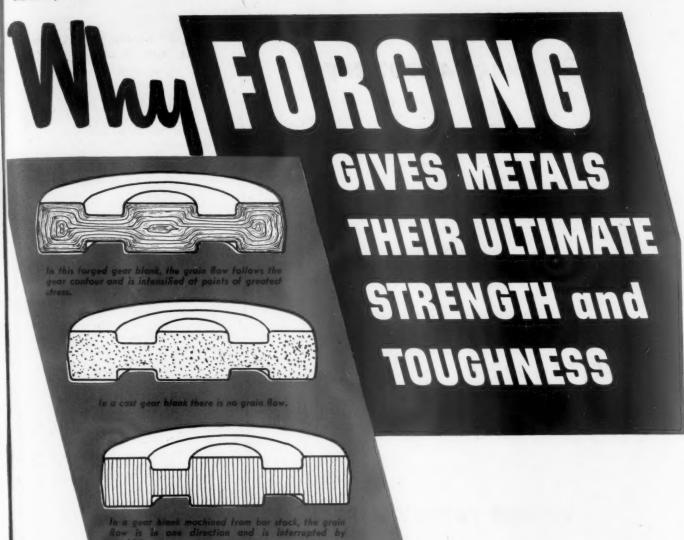
The H. M. Harper Co., Chicago, III.
International Screw Co., Detroif, Mich.
The Lamson & Sessions Co., Cleveland, Ohio
Manufacturers Screw Products, Chicago, III.
Milford Rivet and Machine Co., Milford, Conn.
The National Screw & Mfg. Co., Cleveland, Ohio
New England Screw Co., Keene, N. M.
Parker-Kalon Corp., New York, N. Y.

Pawtucket Serew Ce., Pawtucket, R. I.
Pheoli Manufacturing Co., Chicago, III,
Reading Serew Co., Norristewn, Pa.
Russell Burdsall & Ward Golt & NutCo., Port Chester, N. Y.
Scoviil Manufacturing Co., Waterville, Conn.
Shakeproof Inc., Chicago, III.
The Southington Hardware Mfg. Co., Southington, Conn.
Wolverine Bolt Co., Detroit, Mich.

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The sketches portray the fundamental character of forgings as compared with parts produced by other methods. Only in forgings will you find the tough fibrous grain structure, with the grain flow advantageously directed throughout the piece, and the fibre structure concentrated at the points of greatest shock and stress.

Here is the "secret," known to hammersmiths for hundreds of years, of the far greater resistance of forgings to tensional and torsional stresses. As forgings are metal in an intensely compressed state, they are likewise highly resistant to compression and impact. Forged parts also rank high in fatigue resistance and useful life. Measured in service per dollar expended, forgings are economical.

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For the advanced, speedier and more trouble-free

machines of tomorrow, a broader use of forged parts is definitely indicated. Forgings provide important savings in weight because parts of smaller sectional thickness may be safely used. Forgings require a minimum of machining, and the forging process eliminates internal defects which might cause sudden breakdown or failure.

When you need flat die, drop or upset forgings, let our more than a hundred years of experience help you as it has hundreds of aircraft and ordnance builders during the war era.

KROPP FORGE COMPANY

5301 W. Roosevelt Road Chicago (50), Illinois

Engineering Representatives in Principal Cities



MARCE

(Continued from page 202)

LARGE ATTENDANCE AT WESTERN MASSACHUSETTS DINNER DANCE

Some 300 members and guests of the Purchasing Agents Association of Western Massachusetts attended the organization's 23rd annual ladies night and dinner dance at the Hotel Kimball, Springfield, Mass., January 18th. Guest of honor was Major William J. Foerster, (on leave), QMC, United States Army. At present he is area quartermaster in charge of Air Corps quartermaster units in the North African theater of war and depot quartermaster at a base somewhere in Africa. Major Foerster is president of the New England Etching and Plating Co., Holyoke, Mass., and a past president and proof the W.M.P.A. Charles M. Hears, Jr., president of the association, was transfer arrangements com-The program included a special reception for some 15 new members, distribution of door prizes, dancing and special entertainment.

HEAR TALK ON PLASTICS AT WILMINGTON

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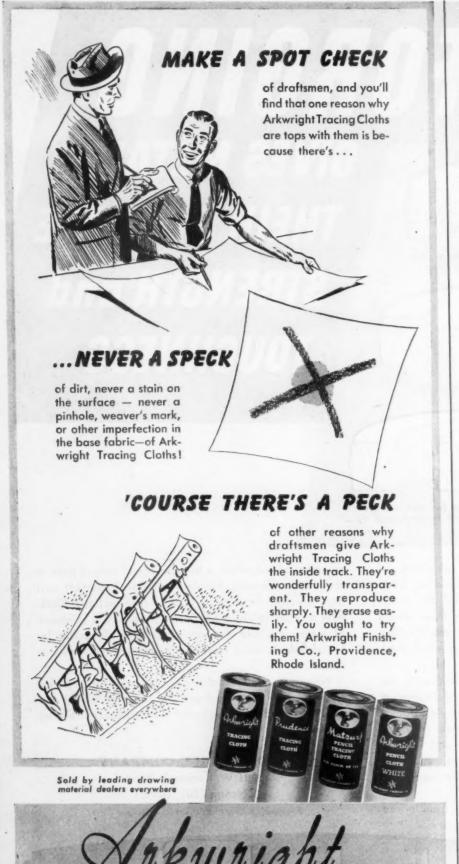
Seventy members of the Purchasing Agents Association of Wilmington, Del., heard an interesting talk on plastics and their uses by Walter Ross of Modern Plastics magazine, at the January 29th meeting of the association held in the Hotel DuPont. Mr. Ross highlighted his talk with demonstrations of plastic applications.

MOTOR SITUATION CRITICAL

Production of integral horsepower electric motors during the next six to nine months will be as critical as any period in the last two years, was the consensus of members of the Integral Horsepower Electric Motor Industry Advisory Committee and WPB officials at a recent meeting, the War Production Board announces.

In the last six weeks several top urgency programs involving considerable quantities of electric equipment have been initiated or expanded, and the electrical equipment for these programs will be needed within the next three to nine months, WPB officials explained. Substantial quantities of equipment are being requested for delivery as early as April for orders that are just now being placed. Requirements for these programs can be met only by extremely close cooperation between WPB, the various claimant agencies and members of the industry, officials emphasized. The tight manpower supply together with an anticipated tight supply of materials such as copper and brass strip, sheet and wire, aluminum strip and sheet and steel castings will make increased production difficult, it was explained.

(Continued on page 210)



AMERICA'S STANDARD FOR OVER 20 YEARS

"SHOW-HOW"

SHOW-HOW

Leading U. S. company gets rush order for new complicated machine. Very secret. Calls "Greenfield" distributor regarding tools needed.



At customer's plant, "Greenfield" man studies blueprints, talks with engineers, makes notes. Finds that 123 tapping operations involve five different materials-carbon steel, alloy steel, bronze, aluminum and magnesium.



5 "Greenfield" man then prepares complete specifications for tap recommended for each of the 123 tapping operations, indicating material to be tapped and machine to be used.



2 Distributor puts in hurry call for "Greenfield" man who arrives in less than two hours from nearby city. Sworn to secrecy, he is given a week to work out tool specifications for 123 tapping operations.



4 Next he studies machines available in customer's plant . . . notes sizes and styles . . . discusses production angles with shop engineers.

b Just to make sure, he calls "Greenfield" home office to check several of his recommendations with case histories contained in "Greenfield's" huge experience file, makes necessary changes and submits finished report . . . all in four days!



11

)-IS le (1) "Greenfield Man" completed survey on the spot in four days instead of week. . . (2) Complete recommendations for tapping setup and tools

were accepted as submitted. . . (3) New, highly restricted war product got into production without the delay of experimenting on "Greenfield" SHOW-HOW is KNOW-HOW in action! tapping operations.

ON THREADING PROBLEMS SIMPLY CALL YOUR "GREENFIELD MAN" THROUGH YOUR "GREENFIELD" DISTRIBUTOR!



CL

MARCH



Whatever your tapping needs may be, Besly is able to offer the most suitable tap—in most instances from stock but, if necessary, as a "special". Either as a standard, or "special", the quality of Besly precision-made taps is assured by the use of fine steel, skillful manufacture, and rigid inspection—Besly traditions for more than 50 years.

An unusual record of service in war production points to the desirability of Besly Taps for use in fast, low-cost threading of peacetime products. If you have a tap problem—remember, our engineers will be glad to help you.



Write, on your firm's letterhead for a copy of this valuable booklet. It's packed with vital facts on proper tapping procedures. Tables listing various classes of fits are included. Tap drill sizes and tapped hole sizes are shown in detail. An interesting series of charts, diagrams and information on proper tap grinding and sharpening is also included. Send for your manual today.

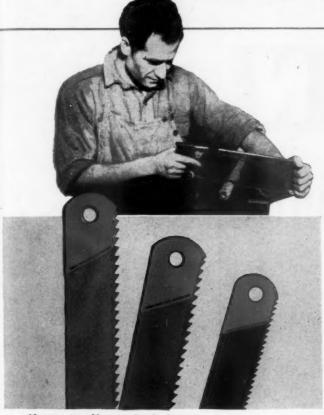
BESLY

BESLY TAPS • BESLY TITAN ABRASIVE WHEELS BESLY GRINDERS AND ACCESSORIES

CHARLES H. BESLY AND COMPANY, 118-124 N. Clinton St., Chicago 6, Ill. • Factory: Beloit, Wis.

SIMONDS "Red End" HACKSAW BLADES

are made in types and tooth-sizes for all jobs ...but in only one quality:



"RED END" Hand Blades

Made of Simonds own electric steel: Standard, Molybdenum, and High Speed (recently restored to the line). Simonds Hand blades are made either hard edge or all hard. And the High Speed blades are extra-flexible to resist breakage even when

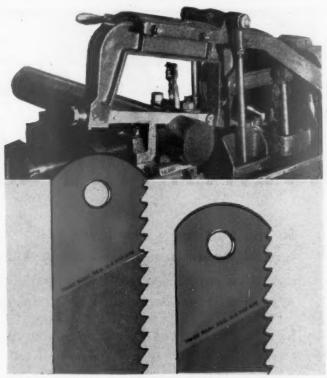
twisted in the cut. These blades give extra-smooth cutting with far less fatigue. Order from your dealer.

S

SEE SIMONDS NEW SOUND FILM

on Care and Use of Hacksaws

This 16 mm color sound film shows how to choose the right blade for each job, and the correct method of operation. And it shows the Simonds technique of blade-tensioning. Ask your dealer to arrange a showing of this film.



"RED END" Power Blades

Made to take the toughest service on any type of power machine...and to keep on taking it. Smoother, straighter cutting...added production...longer blade life...all are now possible through Simonds scientific method of tensioning power hacksaw blades (ask for full particulars). "Red End" Power Blades are made in Simonds Standard, Molybdenum, and High Speed Steel. Order from your dealer.

BRANCH OFFICES: 1350 Columbia Rd., Boston 27, Mass.; 127 S. GreenSt., Chicago 7, Ill.; 228, First St., San Francisco 5, California; 311 S. W. First Ave., Portland 4, Oregon; 31 W Trent Ave., Spokane 8, Washington.

PRODUCTION TOOLS
FOR CUTTING METAL,
WOOD,
PAPER, PLASTICS



CUT THE WAR SHORT ... BUY WAR BONDS ... AND THEN BUY MORE WAR BONDS

MARCE



ALLEN

IDENTIFYING MARKS

So you Purchasors may know your "ALLENS" for sure, — so you'll not confuse the Allen type with the Allen make of screw — we mark each genuine ALLEN with a distinctive sign of its origin.

In ALLEN "pressur-formd" Cap Screws, the Allen initial letter "A" is die-stamped in the bottom of the socket-hole.

In our Hollow Set Screws, Flat Head Cap Screws, Shoulder Screws and Pipe Plugs, we form a triangle in the socket bottom as the Allen distinguishing mark.

So look for either the "A" or the triangle in the socket bottom of hex-socket screws. Either mark is your assurance of Allen make, Allen strength, Allen accuracy and HOLDING-POWER.

* * *

THE ALLEN MANUFACTURING COMPANY HARTFORD, * ALLEN * CONNECTICUT, U.S.A.

FILM AND EDUCATIONAL PROGRAM ON MAGNESIUM

Executives, purchasing agents and engineering groups may now have the benefit, without cost to them, of an educational program on magnesium, thanks to the enterprise of the Hills-McCanna Co., 3025 N. Western Avenue, Chicago.

The program consists of a sound film depicting the production and fabrication of magnesium, particular emphasis being placed on foundry operations, and a display of varied types of magnesium products, produced from sheet, rod, tube, extrusions, forgings, sand, die and permanent mold castings, etc. Talks are made by high company officials, and as souvenirs the company distributes magnesium discs and a booklet entitled "A Tour of a Modern Magnesium Foundry."

SHOWN BEFORE PURCHASING GROUPS

Hills-McCanna Company, along with the Dow Chemical Company and Revere Copper and Brass Corporation, have conducted several such programs in conjunction with local engineering, purchasing and technical societies which have been highly praised.

An interesting part of the program is a "Guess the Weight" contest. The individual coming nearest to telling the weight of a cube of bronze, iron, aluminum and magnesium, along with the weight of a pretty girl, is presented with a war bond.

Among features of the display are sand castings consisting of airplane engine parts, landing wheels, portable and manually handled tools, household appliances and other castings.

Duplicate copies of the film are available for private showing.

THE HIGHWAY TO ALASKA FILM RELEASED BY ALLIS-CHALMERS

Photographically captured for eternity in all its magnitude and wonderment, the miraculous construction job of the "Highway to Alaska" can now be witnessed by all. For just released by Allis-Chalmers Mfg. Co., Tractor Division, is a 16 mm. Kodachrome film, with sound, which illustrates in 22 minutes the highlights of America's glory road.

From Edmonton Canada, to Fairbanks, Alaska, the film records, in nature's genuine colors, scenery and action in the muskeg of the swamps, in the rocks of the mountain crags, in the frozen Arctic rivers, and in the stubborn forests, revealing some of the most magnificent scenery the Americas can offer.

This film is available to all interested groups, without charge, in sound-on-film only and cannot be run on a silent projector. When requesting a print be sure to give the date wanted, for only a limited number are available and must be scheduled for efficient handling. Direct your letter to the Tractor Division Photography Department of Allis-Chalmers Manufacturing Company, Milwaukee 1, Wisconsin.

(Continued on page 212)

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There's a NEW

MATERIAL FOR PARTS LIKE THIS ...



YES, the copper alloys, too, are new materials today—materials you will want to study carefully when you plan your postwar designs.

For instance—there's TELNIC Bronze, the first high copper content alloy to combine high corrosion resistance, excellent hot workability, free cutting characteristics, age hardenability, high strength and hardness.

Older copper alloys depended on lead for free machining properties—and lead is highly detrimental to hot working. But TELNIC Bronze uses carefully controlled quanti-

ties of *tellurium* in place of lead, making this alloy free machining without affecting its hot working characteristics in any way.

For any part that can best be fabricated by a combination of hot forging and machining... and that must have high strength, excellent corrosion resistance, and reasonably good conductivity... you will find TELNIC Bronze an ideal material. Right now, of course, it is being used entirely for war applications... but we'll be glad to work with you in adapting its unique properties to your postwar plans.

*REG U. S. PAT. OFFICE

CHASE BRASS & COPPER CO.

Waterbury 91, Connecticut

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

ALBANY† ATLANTA† BALTIMORE BOSTON CHICAGO

CINCINNATI CLEVELAND DETROIT . HOUSTON INDIANAPOLIS†
KANSAS CITY, MO.†
LOS ANGELES
MILWAUKEE



MINNEAPOLIS
NEWARK
NEW ORLEANS
NEW YORK

PHILADELPHIA
PITTSBURGH
PROVIDENCE
ROCHESTER†

SAN FRANCISCO
SEATTLE
ST. LOUIS
WASHINGTON †
Indicates Sales Office Only

This is the Chase Network - handiest way to buy brass

Air Express Gains 3 Days, Saves \$4,150



A PLANT in California faces a shut-down for want of critical equipment made in New Jersey. Figuring a loss of \$1,500 for every day his plant is idle, the president picks up a phone and orders the equipment sent Air Express, even though the shipment is sizeable. (When time means money, Air Express pays-always!)



THE COST? Higher, yes. But by air, coast-tocoast delivery is made overnight - rather than in 3 or more days by other means. Air Express cost, by the way, includes special pick-up and delivery.



WOULDN'T YOU pay more to save a whole lot more? That's why thousands of manufacturers use Air Express as a matter of routine. Heavy or light, large or small, if shipmen' fits in a plane, it can go Air Express.

Specify Air Express — Low Cost for High Speed

25 lbs., for instance, travels more than 500 miles for \$4.38, more than 1,000 miles for \$8.75, more than 2,000 miles for \$17.50, at a speed of three miles a minute-with cost including special pick-up and delivery in all U.S. cities and principal towns. (Often same-day delivery between airport towns and cities.) Direct service to scores of foreign countries. Rapid air-rail service to 23,000 off-airline points in the United States.



GETS THERE FIRST

WriteToday for"Quizzical Quizz", abook-let packed with facts that will help you solve many a shipping problem. Railway Express Agency, Air Express Division, 230 Park Avenue, New York 17. Or ask for it at any Airline or Express office.

RAILWAY EXPRESS AGENCY, AIR EXPRESS DIVISION Representing the AIRLINES of the United States

(Continued from page 210)

SEVERAL ARMY FILMS ANNOUNCED

following films are available through the Motion Picture Branch, Industrial Services Division, Room 1315. 1501 Broadway, New York, N. Y

Prelude to War; The Nazis Strike; Divide and Conquer; Battle of Britain; (each 50 minutes); and Battle of Russia, 75 minutes

The Hidden Army, 15 minutes, is recommended for showing to women work-

Film Communique No. 11, 20 minutes. It shows the vicious fighting that went into the taking of Cherbourg, and highlights of American Victories in Europe and the South Pacific.

The War Moves West. Twelfth in the Film Communique series, this picture is devoted primarily to our fight against Japan. Fighting in China is highlighted.

CITY PURCHASING AGENT SPENDS \$5,832,156

Wartime shortage and priority problems have given him the biggest head-aches, reports Willard V. Pape, Purchasing Agent, City of Seattle, Wash, whose annual report reveals that his office spent \$5,832,156 last year to buy materials and equipment for the city. During the year the Purchasing Department placed 26,000 orders for supplies, material, equipment and services. Savings were few because of the shortage of virtually all types of materials, he stated, although \$30,000 was saved on the annual gasoline contract by obtaining a reduction of one cent a gallon through competitive bidding. The department disposed of \$46,540 worth of surplus, obsolete and junk material.

"War conditions have made it necessary to spend far more time, effort and expense than during prewar years," he

DRESSER INDUSTRIES ACQUIRE INTERNATIONAL-STACEY CORP

Dresser Industries, Inc., Bradford, Pa. has acquired the assets of International Stacey Corp., which will be dissolved, and of its subsidiaries, which will continue in operation. The 10 companies now comprising the Dresser group manufacture a completely rounded line of products, from pipe couplings to large pumps, blowers and compressors. They derricks, drilling apparatus, radio and airport towers and equipment. gas storage tanks and gas fired home heating equipment. These ten companies are as follows:

Dresser Manufacturing Division, Bradford, Pa.

The Bryant Heater Co., Cleveland, O. Clark Bros. Co., Inc., Olean, N. Y. Pacific Pumps, Inc., Huntington Park, Calif.

International Derrick & Equipment (Continued on page 216)

BRON

MARCH,

Breakin day in of the plywoo Facing

Buttres and cu succes Availa

our su widths band :

IPER-SAW best for NON-FERROUS metals

MAGNESIUM · ALUMINUM · COPPER · BRASS **BRONZE** • ZINC • LAMINATES • PLASTICS • WOOD

Breaking all records in war plants today in speedier, smoother shaping of the new light metals, plastics and plywoods.

Facing a big future because DoALL Buttress is the only saw that tackles and cuts these tough, new materials successfully. Requires no Resharpening.

Available for immediate delivery from our supply points. Comes in various widths and pitches to fit any modern band sawing machine.

DOALL

ALUMINUM RISER RINGS 120 sq. in. per min.

MAGNESIUM CASTINGS 80.40 sq. in. per min.

ALUMINUM INGOTS 78 sq. in. per min.

Send Us Your Tough Jobs

Have you a sawing problem that's hard to lick? Let our research engineers put it through our laboratory and give you a written report on the saw and speed that give best results.

Write for Circular about the sensational performance of the DoALL Buttress Saw



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DoAL

INDUSTRY'S NEW SET OF TOOLS

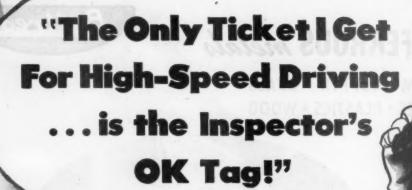
THE DOALL COMPANY

228 N. Laurel Avenue

Des Plaines, Illinois



MARCH,



...and he's making faster fastenings every day with **AMERICAN PHILLIPS SCREWS**

The slowest workers become highly efficient when you equip them with American Phillips Screws and power drivers. They're no longer slowed down by frequent fumbling and dropping, by crooked driving, or by screws with broken heads that must be backed out and replaced.

And the driving process itself is far faster, with American Phillips Screws. For the driving bit and screw align themselves into one straight driving unit . . . can't twist apart ... don't have to be held in line by main strength. This permits the use of power drivers, multiplies man power, and gives maximum return on screw-driving costs, to small users as well as large.

The American brand of Phillips Recessed Head Screws is made under rigid laboratory check, and a unique system of piece inspection. Delivery service is maintained by high-speed production. And engineering service is at your service on any problem.

AMERICAN SCREW COMPANY

PROVIDENCE 1, RHODE ISLAND

Chicago 11: 589 E, Illinois Street

Detroit 2: 502 Stephenson Building

Take a Recess from Slotted-Screw Costs and Troubles ... the Tapered, Engineered Recess of:

AMERICAN ILLIPS Screws



YES, you can obtain both molded plastic parts and small motor drives or assemblies from General Industries. Under one roof and one general management we have long supplied them to leading manufacturers in a wide range of industries.

INQUIRE ABOUT BOTH FROM GENERAL INDUSTRIES

Few things "stump" our molded plastics division. Whether it's a big job or a little one, we have the facilities and the "know-how" to turn it out in any quantity. Our engineers and mold makers have a habit of reading between your blueprint lines, to dig out some way to do the job better, more economically or faster. Our operators are skilled from many years of experience in compression, transfer or injection molding, to deliver work 100% to specifications and on time.

You'll find that same thorough competence in our small motors division. For many years our Smooth Power drives have been standard for leading makers of phonograph and radio equipment, automotive devices and other low-torque requirements. Many buyers obtain exactly what they need in our standard line, but if made-to-order units are called for, our engineers and plant can deliver them.

So, for molded plastic parts or low-torque motors or drives, ask General Industries.

Our military commitments have priorities at present, but a general discussion now can pave the way for later details. We'll appreciate it if you'll address the division involved ... molded plastics or motors.









(Continued from page 212)

Co., Columbus, O., Delaware, O., Marietta, O., Beaumont, Tex., Torrance, Calif.

Roots-Connorsville Blower Corp., Connersville, Ind.

Stacey Bros. Gas Construction Co., Cincinnati, O.

Bovaird & Seyfang Manufacturing Co., Bradford, Pa.

Dresser Manufacturing Co., Ltd., To-ronto, Ont.

Van der Horst Corp. of America, Olean, N. Y., Cleveland, O.

ALUMINUM RESTRICTIONS TIGHTENED

Inventory restrictions applicable to users of aluminum sheet, strip and plate have been tightened because of heavy demands for these forms of the metal in aircraft production, the War Production Board announces.

Under the new rule, a user of 10,000 pounds or more a month is not permitted to accept delivery of any item of aluminum sheet, strip or plate if his inventory is or would become because of such acceptance in excess of the quantity of such item he requires during the succeeding 30 days for authorized production. Users previously were limited to a 60-day supply.

This rule, which is contained in Direction No. 21 to Controlled Materials Plan Regulation No. 2, does not apply (1) to any aluminum sheet, strip or plate in transit or loaded for delivery on February 5, 1945, or (2) to aluminum sheet, strip or plate that is shipped by a producer (but not a warehouse) prior to March 1, 1945. The second exception to the general rule has been included to permit mills to continue operation on schedules that have, in most cases, already been planned for February 1945.

Users are required to cancel or modify their outstanding orders for aluminum sheet, strip and plate in order that they shall conform to the requirements of the new Direction No. 21.

SALE OF NON-ESSENTIAL LEAD PRODUCTS PROHIBITED

Manufacturers and distributors of specified non-essential products containing lead are prohibited from further sales of such products after February 28, 1945. In the third amendment to Order M-38 issued during the last five weeks to conserve lead for war needs, the War Production Board announces.

This amendment, effective February 1, 1945, however, increases the allowable use of lead in storage batteries for civilian use during the first quarter of 1945 from 50 per cent of the 1944 base period to 75 per cent, with subsequent allotments to be announced. Lead uses were also liberalized moderately in List B of the order where the essentiality in the war effort had been established and sub-

(Continued on page 220)

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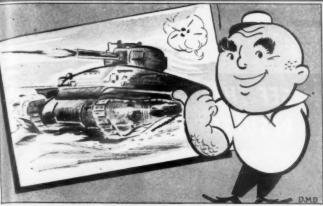
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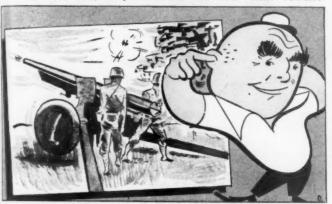
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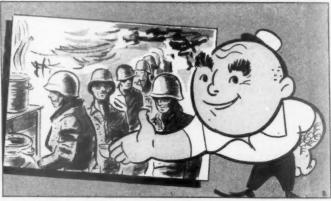
On battlefronts throughout the world Bundy tubing is seeing action. Army tanks, bulldozers and tractors use Bundyweld for gas, oil and brake lines as do armored reconnaissance cars, weapon carriers and many other vehicles.



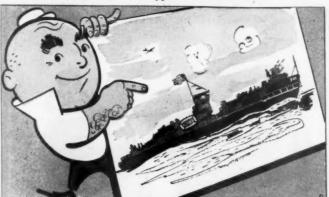
All types of fighting equipment use Bundyweld . . . from jeeps to planes, from tank destroyers to parachutes. Army trucks including Diesel cargo, oil service, gun tractor and bomb service trucks plus many others depend on Bundyweld.



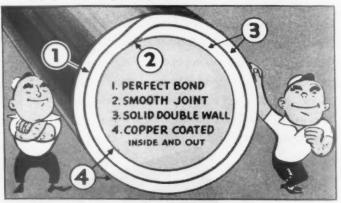
Ammunition for artillery depends on Bundy for percussion primers and burster tubes to set off the charge. Bundy tubing is also used for vital parts in incendiaries, bazookas, rocket bombs and other types of ammunition.



Hot rations are supplied to our men in bactle from Army field stoves equipped with "life lines" of Bundy tubing. Food and water are kept cool and pure with refrigerating equipment using Bundyweld.



Diesel powered landing craft use Bundyweld for fuel and oil lines. Even smoke screens laid down by destroyers and PT boats depend on Bundy tubing! Planes, too, use Bundyweld for vital "life lines" and important primer tubes.



On land, at sea and in the air Bundyweld is giving constant proof of superior performance. For ways in which it can be used on your war or peacetime products, consult Bundy Research and Engineering Departments, Detroit 13, Mich.



BUNDY TUBING DISTRIBUTORS AND REPRESENTATIVES:-

Standard Tube Sales Corp. Lapham-Hickey Company
1 Admiral Avenue 3333 W. 47th Place 112 South 16th Street

3628 East Marginal Way Philadelphia 2, Pennsylvania Seattle 4, Washington

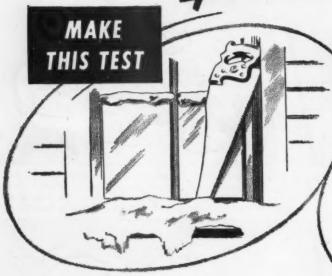
Pacific Metals Company, Ltd. 3100 19th Street San Francisco 10, California

Maspeth, New York City, N. Y.

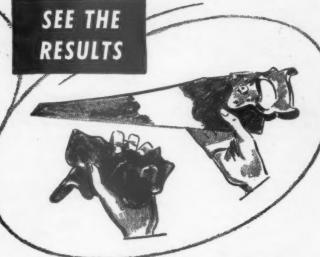
Chicago 32, Illinois

MARCH

How to prevent Corrosion



Coat a section of any piece of raw metal with a protective film of Anti-Corrode. Place it outof-doors, and leave exposed to the elements.



Rain, snow, changing temperature, dust and grime have eaten into and oxidized the unprotected metal. But note surface under Anti-Corrode film-bright and unharmed, in its original state.

CITIES SERVICE ANTI-CORRODE is a safe rust and corrosion preventive that brings amazing results. It is a reliable safeguard against corrosion of metals in any form or state of finish-whether in storage or in transit. Anti-Corrode forms a tenacious, durable film that is impervious to moisture and the more common gases prevalent in the atmosphere. And, since it contains lubricating material, it need not be removed in drawing operations. Anti-Corrode is made in several grades to meet specific requirements and severest tests. It is economical, easy to apply and can be removed with kerosene or any petroleum solvent.

> Take advantage of this FREE ANTI-CORRODE demonstration offer Mail this coupon today!

(Available only in Cities Service marketing territory EAST of the Rockies.)



This TEAM Will Save You Money and Materials

Recently, we announced the development of Cities Service Rust Remover, and responses to the demonstration offer far exceeded our expectations. Rust Remover, of course, removes rust. Anti-Corrode is designed to prevent rust and corrosion. Together, they will safeguard your equipment and war production-for the duration!



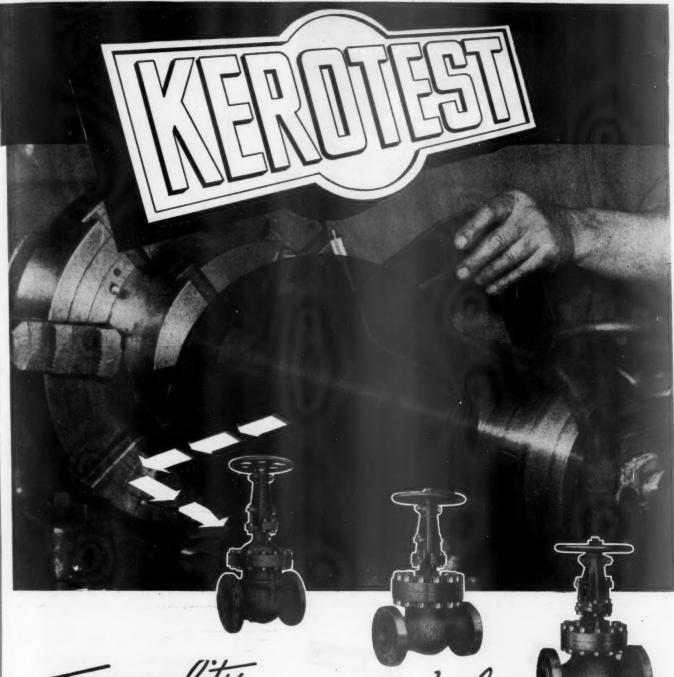
CITIES SERVICE OIL COMPANY

Room 237, Sixty Wall Tower, New York 5, New York

Gentlemen: I would like to test Anti-Corrode on my own equipment FREE OF CHARGE. Please send me the details.

Company_

Address_



Top quality

Precision-Engineered Valves

—that only experienced materials

-that only experienced master craftsmen and unceasing research can provide.

KEROTEST MANUFACTURING COMPANY
PITTSBURGH 22, PA.

VALVES • ACCESSORIES • FITTINGS

MARCH,



Whatever your requirements for bolts, nuts, rivets or cap screws, you will find that Oliver Fasteners measure up to your highest expectations.

Made by one of the oldest and largest manufacturers of industrial fasteners, Oliver products represent the most modern ideas in design and manufacture. We offer a complete range of sizes and types, with materials, heat treatments, protective coatings and other specialized features to meet your particular needs.

Our nearest district representative will gladly help you solve your fastening problems.

Rivets

Square and hexagon head machine bolts, carriage bolts and a wide variety of types for particular applications. Rolled or cut threads; black, milled or ground body. Special types for high temperature applications. Sizes up to $2\frac{1}{2}$ in diameter.

Bolts

Nuts

All regular types of nuts including square, hexagon, castellated, slotted, cold punched, hot pressed, double chamfered, semi-finished. Carbon steels, alloys, non-ferrous. Sizes up to 2 inches bolt diameter.

Sizes up to 134 in. diameter, all commercial heads and lengths. Materials include low-carbon steel, boiler steel, structural steel, copper-bearing steel, wrought iron. Annealed, high strength, close tolerance and other special properties where desirable.

Cap Screws

Oliver Cap Screws meet your most exacting requirements for accuracy, uniformity and highest quality. Our long experience in the manufacture of headed and threaded products, gives the knowledge and skill necessary to produce dependable cap screws.



SOUTH 10th and MURIEL STREETS . PITTSBURGH 3, PA.

(Continued from page 216)

stitutions of less critical materials cannot be effected. The latter included lead wool, lead for X-ray, abrasives and grinding wheels, industrial filters, rubber curing processes, plastics, zinc rolling cable covering, battery cables (under L-158), insulator pins and cold drawing of wire.

Products containing lead that manufacturers and distributors are prohibited from selling after February 28, 1945, which are included in List A of the Order (prohibited articles and uses), follow:

Buttons, badges, emblems and regalia, (except for sale to the Army and Navy, War Shipping Administration, U. S. Maritime Commission and Veterans Administration).

2. Costume jewelry, novelties and tro-

phies.

3. Tennis court markers.

4. Games and toys.

5. Statuary and art goods (except church goods).

ELECTRIC-REFRIGERATION
CONDENSING UNITS

Commercial Standard CS 107-45, commercial electric-Refrigeration Condensing Units (second edition) (TS-3741) is announced by I. J. Fairchild, chief, Division of Trade Standards, Natonal Bureau of Standards, Washington, D. C.

RECORD EXPRESS TRAFFIC MOVED LAST YEAR

Business handled by Railway Express Agency in 1944 was the largest in its history, exceeded 200,000,000 shipments, approximately 70 per cent of it war traffic, according to L. O. Head, president. Included in this total were about 1,750,000 air express shipments which constituted a rise of approximately 14 per cent over the volume of air express business in 1943.

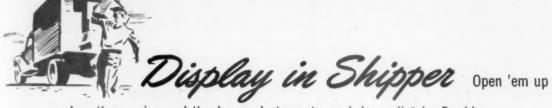
LUMBER PRODUCTION SHORT OF REQUIREMENTS

Total lumber requirements for 1945 may reach 40,000,000,000 board feet, according to preliminary estimates based on the assumption that the war in Europe and in the East will continue through the year, the War Production Board reports. The gap between requirements and supply will probably be greater in 1945 than in 1944, since 1945 production may fall as much as 10 per cent below that of 1944, WPB said. Estimated requirements include sawed crossties and mine ties, it was pointed out.

Estimates of 1945 production are placed at 29,500,000,000 board feet, with the possibility of raising production to 32,000,000,000 board feet if conditions that are at present retarding production improve. Anticipated imports and withdrawals from stocks will add an estimated 1,500,000,000 board feet to the available supply for 1945.

TH

HOB



when they arrive and they're ready to go to work immediately. Double purpose packages—shipping box plus product display—win dealer's approval. Just a simple setting-up operation and they go into sales action immediately—thanks to H & D's simplified construction. Each box is a master salesman, prepared by expert package engineers who know, through experience and results records, how to design the kind of sales packages retailers prefer.



THE HINDE & DAUCH PAPER COMPANY, 4523 DECATUR STREET, SANDUSKY, OHIO Factories in Baltimore . Boston . Buffalo . Chicago . Cleveland . Detroit . Gloucester, N. '. HOBOKEN . KANSAS CITY . LENOIR, N. C. . MONTREAL . RICHMOND . ST. LOUIS . SANDUSKY, OHIO . TORONTO

There's Office Dynamite in a Couple of Cokes



Make no mistake about it ... girls gather around a drugstore table and "grouse" about their gripes.

And often their principal gripes are over their tools ... their office supplies ... the paper they have to use.

Seems petty, but it's important ... good paper for your letterheads, billheads, forms or ledgers, keeps your best girls from being your worst enemies.

So standardize with the finest papers for business needs ... Eastern Papers. Ask your paper merchant or write to us for a new portfolio that shows all the Fine Eastern Papers for Business.



EASTERN CORPORATION, BANGOR, ME.

HE also by the M. D.

258, scribe as fo

"W chase to the That copies receive the man The copies the copies

which the in "Cogoes a in



Purchase Order Form and Follow-up Postal

HERE is Purchase Order Form, and also double follow-up post card used by the American Blower Corporation.

M. D. Carlton, Purchasing Agent, Box 258, Station G, Columbus, Ohio, describes the form and the use of the card, as follows:

"We make twelve copies of the Purchase Order form which are distributed to the various departments concerned. That section of the form represented by copies 7 to 12 inclusive, is used as a receiving report. The man who checks the material in is given copies 8, 9, 10, 11 and 12, which describe the material. The quantity is not shown on these five copies, but it is shown on number 7 copy which the receiving clerk checks against the material record.

"One of these copies of the form goes with the material and serves as a material transfer so that mate-

(Continued on page 224)

Returns on the follow-up postcard illustrated below, approximate 90%.

AMERICAN	AMERICAN DIVISION OF AMERICAN I		DARD SANITARY COR		ANTE SON
	The P O No. below must a Packages, Invoices, and Slu	ppear on all	DAYE		
	P. O. No.	SH	IP TO		
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1		VII.			
SE FURNISH THE MATER	HAL SPECIFIED BELOW SUBJECT TO TERM		O. B. POINT EIN NAMED AND ON BACK I	HEREOF, WHICH ARE MADE A	ART OF THIS CO
				HEREOF, WHICH ARE MADE A	
		S AND CONDITIONS HER			
POR DEPT		A AND CONDITIONS HER ASSTRAIN	ACCT NO	LANIT	.701

1	IMPORTANTANSWER	Date
Gentlerfen:	Columbus 7, Ohio,	Gentlemen: Your Order No.
Please advise shipping	g schedule on our Order No.	(Was Shipped) (Will be Shipped)
dated	Your Order No. USING ATTACHED RETURN POSTAL	Via Via
Remarks:	- Contract to the contract of	Remarks:
IM 12-44 AB	Yours truly, AMERICAN BLOWER CORPORATION Purchasing Department	Yours truly,

PURCHASING

MARCH,

After all-the point's the pencil and vice versa. On every Venus VELVET the point is smooth and strong. It stays. sharp, keeps writing clean. Try Venus VELVETS... you'll specify them!

Venus VELVETS are better pencils . . but only 5¢.

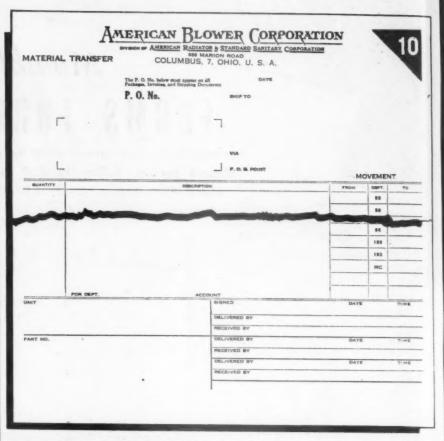


AMERICAN LEAD PENCIL COMPANY, HOBOKEN, NEW JERSEY

(Continued from page 223) rial may be identified in each department.

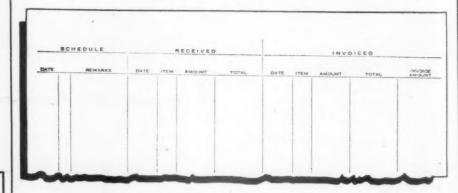
"We find that this form saves considerable time in our Receiving Department structions at the bottom), goes to our Priorities Division where it is used in tabulating priority information.

"With reference to the follow-up card: We find that we get about 90% return



Twelve copies are made of the Purchase Order. In addition to Vendor, these are for the Purchasing Department, "Special Copy", "Branch Office", Cost Copy", and the section of six copies which is used as a receiving report. This section includes No. 10 (illustrated above), "Material Transfer" copy, which in form is identical to No. 11 or "Rec.Report.Dept.Rec.Material".

Reproduction below is of form on back of Purchasing Department copy.



in writing up receiving reports. However, when we have a partial shipment on a purchase order we use the original form for the first shipment and thereafter it is necessary for the receiving clerk to write a supplemental receiving form on the balance when received. At the present time the No. 4 copy (identical with the No. 1 copy reproduced except that it does not contain the printed in-

on these cards, which I believe is due mainly to the fact that it is very convenient for who ever is checking the order, to write the desired information on the return half of the double-post card and return it to us.

"Each of these cards, it will be noted, bears a 'remarks' space. Here we sometimes indicate the Item number we are

(Continued on page 226)

Down-to-earth help on

Contract Termination

Send for our booklet, "The ABC of Contract Termination." Outlines termination procedure, sets down a simple, practical method of producing all paper work required.



Here's a booklet that gives you clear, concise facts about contract windups. It tells you how to plan your internal termination organization. What paper work is needed. How to produce this paper work quickly and efficiently, in keeping with government requirements.

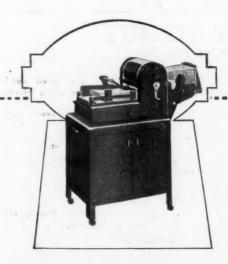
The method outlined, based on the use of the Mimeograph* duplicator, has been approved by representative industries, and is being used by both large and small companies.

It makes it possible for termination machinery to start rolling within one hour after receipt of the notification telegram. It assures smooth coordination, accurate control. It eliminates rewriting of constant data. And perhaps most important of all, it meets all government require-

ments, one of the most vital of which is for fade-proof, permanently legible copies. (The clean, black-on-white copy produced on the Mimeograph duplicator with Mimeograph brand supplies will not smudge or fade in spite of constant handling, weather, exposure, oils and other chemicals common to industry.)

A. B. DICK COMPANY, Chicago

P. S.—As part of our service in connection with contract termination, Mimeograph die-impressed stencils of the required OCS forms are available at once from your authorized. Mimeograph distributor. This eliminates the need for preprinted forms. Type inventory information in position on one of these stencils and reproduce form and fill-in together—as many copies as you need.



due

the and ted, me-

Mimeograph duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Pat. Off.

THERE'S SOMETHING ABOUT A BURROUGHS RIBBON THAT MAKES MY TYPING NEATER



I KNOW THE ANSWER. FINE FABRICS AND FINE INKS GO INTO BURROUGHS RIBBONS

You get the best in **BURROUGHS** CARBON PAPER ROLL PAPER RIBBONS

Burroughs' intimate knowledge of business machines in action established the exacting specifications of quality which characterize Burroughs supplies for all types and makes of business machines. The next time you need ribbons, carbon paper or roll paper, call your local Burroughs office. Ask for details on Burroughs Discount Purchase Plans which provide savings of 10% to 40 % on your quantity purchases.

SUPPLIES FOR BUSINESS MACHINES SURROUGHS ADDING MACHINE COMPANY

(Continued from page 224)

referring to. If the card has reference to a partial shipment still due, we show the amount due in the remarks' space, thus indicating that we have not received the complete order.

"The Purchase Order forms are typed on an IBM Electromatic, and one girl can produce approximately 75 ordinary purchase orders in an eight-hour day. The carbons that go into these forms are cut so that prices are shown only where we want them to show. This also applies to quantity.

"We have used these forms for the past eight or ten years."

Purchase Order Form and Requisitions

RED G. SPACE, Purchasing Agent for The Seymour Manufacturing Co., Seymour, Conn., commenting on the accompanying Purchase Order Form used by the Seymour Manufacturing Company

of Purchasing Agents, modified somewhat to fit their particular needs.

"We are just a bit proud of our purchase form," he writes, "as many of our vendors have in time past commented on

PURCHASE ORDER

THE SEYMOUR MFG. CO.

SEYMOUR, CONN.

NICKEL SILVER, PHOSPHOR BRONZE, NICKEL ANODES

Nº 20450

Ac. No.

Put the Above Numbe Packages and Invo Without Pail

Please Acknowledge Order, and Advise Definite Delivery Date

SHIP VIA

m Invoice Required. Attach Bill of Leding.

THE SEYMOUR MFG. CO.

at Bills paid on the 10th and 25th. All Not Bills on the 5th pr

and one that is practically identical and which is used by its subsidiary The H. A. Matthews Manufacturing Co., states that the forms were designed many years ago and were based on the Standard form developed by the National Association

its neatness and the orderly fashion in which it lends itself to being made out."

The Seymour form is prepared in triplicate, the second being a blue copy which is retained by the Purchasing Depart-

(Continued on page 242)

YOUR ATTENTION; PLEASE!

Form A-32 6m 4-16

WANT TO BUY

(OF COURSE, WE SELL, TOO!)

STEEL LOCKERS — Give sizes, make, number, etc.

OFFICE FURNITURE, OFFICE EQUIPMENT, BUSINESS MACHINES, give serial numbers, and descriptions.

Coin counters, Changers; Check Cancelling Machines. general descriptions. Co SAFES — Cabinet, Underwriters' Label.

VISIBLE EQUIPMENT, such as Kardex, Acme, etc. — Note number of drawers, size of

SAFE DEPOSIT Boxes — Sizes, Quantity, Make, General description.

ADDRESSOGRAPH EQUIPMENT, FRAMES, TRAYS, CABINETS, MACHINES, etc.

Give best prices "as is", f.o.b. point of purchase.

May I head from you? Phone, wire or write

MURPHEY

CHestnut 9000

1800 Dyer

St. Louis County, Mo.

Oldest exclusive used office equipment dealer west of Mississippi "Never say fail - - - AMERICA!"

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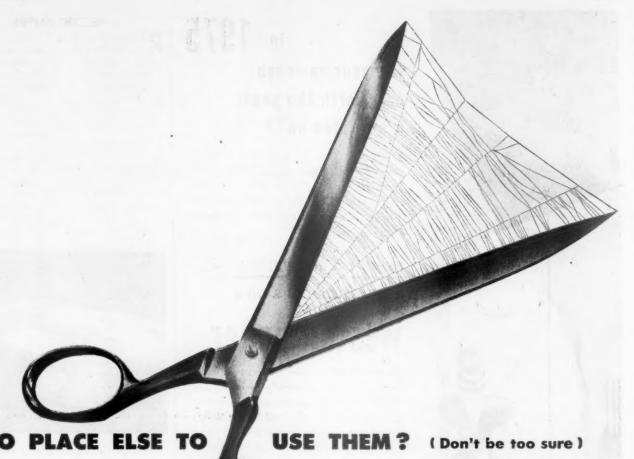
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A challenge to executives who want to strengthen the position of their companies in the highly competitive period ahead

THESE SCISSORS gathered no cobwebs when you were checking into your costs of distribution, financing, product engineering, manufacturing, plant facilities—all with an eye on the competition you knew you'd be up against in the period ahead.

But where else can non-productive costs be cut, where else can work simplification be applied to enable your company to produce *more for less*—the key not only to your own profits but also to maintained national buying power and employment?

A new, almost untapped source of savings

There is one place you probably haven't thought to look. And that is in your written systems of control...in non-productive paper work.

Few executives realize that *direct* paper-work costs, alone, have nearly quadrupled in the past 40 years.

But the savings that can be effected in eliminating wasteful, inefficient paper work go beyond the forms, themselves—beyond the cost of the labor to process them.

Paper-work savings multiply themselves because papers control every basic activity in a business.

Paper-work savings multiply themselves

Take, for example, the case of a Cleveland maker of aircraft parts: a simple Tool Replacement Order system, minimizing paper work, ended critical production hold-ups; avoided high overtime costs for emergency tool making; reduced tool inventory. A "Formcraft Digest," D-184, explains how.

The Standard Register Company, through its broad experience, unusual facilities and practical techniques, has helped effect five- and six-figure savings for hundreds of leading companies. Our approach to the problem of system procedure, writing method and form design follows a step-by-step plan which gets at the facts and arrives at the answers in a minimum of time. And without upsetting office routine.



THE STANDARD REGISTER COMPANY

Manufacturer of Record Systems of Control for Business and Industry
DAYTON 1, OHIO

MARCH

R ECORD papers call for a number of qualities in precise adjustment one to another-ability to take printing, lithographing, pen ruling, typing, handwriting. and erasures, folding strength, tearing strength, extreme uniformity of surface on both sides, and sheer durability.

The making of such papers is a scientific laboratory controlled process and involves a high degree of craftsmanship and experience plus the most advanced technological control. Here is a brief description of how record papers are made at the Byron Weston Company mills at Dalton, Mass., an organization specializing in one particular kind or class of papers-cotton content fibre papers specifically designed



One of the Weston beating engines.

for business, legal and governmental rec-

Cotton fibres are claimed to make the finest paper making material because they are practically pure cellulose, which, without the presence of impurities, resists deterioration indefinitely; and secondly, because cotton fibres are made up of long curly fibrillae or tendrils that cling and mesh together to make a strong, close-knit

At the Weston mills, the cotton clip-



Fourdrinier equipment showing dry end.

pings fresh from the shirt factories are 'dusted" in machines that remove every trace of lint and dirt, after which they are inspected and the sorted clippings are then cooked in huge "digesters" to remove the sizing material added in the textile making process.

Next they are washed to snowy whiteness in pure artesian water. Giant "beat-

(Continued on page 230)



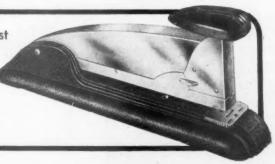


GENUINE 100% ROUND WIRE "SPEED" STAPLES

UNCONDITIONALLY GUARANTEED, these are the finest staples ever produced ... Perfected by SPEED's Engineering Staff after years of development ... They're precision-made — uniform in quality and in count ... Every staple on a strip is in

STAPLES achieve better, smoother penetration . . . And, being round wire, they are free from the film of excess glue that collects on ordinary staples and which is a common cause of clogging.

GENUINE "SPEED" STAPLES are the best you can use in any standard stapling machine. But when used in SPEED Swingline STAPLERS — you have the smoothest stapling team in the world working for you!



SPEED PRODUCTS COMPANY . LONG ISLAND CITY 1, N. Y.



PERFORMANCE COUNTS In Duplicating Quality and Economy

For pre-eminently sharp, beautiful, economical duplicating,

COLUMBIA **GELATINE ROLLS**

Easy operation-control assured

- Loose-end spindles a wide range of sizes to fit all makes of duplicators.
- Year round, "All Season" formula.
- Visible condition indicator.
- Continuous, one piece backs of super-wear cloth.
- Longer life real, worthwhile economy.

EVERY OFFICE NEEDS A DUPLICATOR "PORTABLE" The Compact Inexpensive, Versatile COLUMBIA NO. 1



Printing sheet surface up to 83/4" x 14". Serves many of the functions of higher-priced machines. Contains Columbia "all-season" gelatine roll.

Ask your dealer or the Columbia office nearest you for information and prices.

COLUMBI

RIBBON & CARBON MANUFACTURING CO., INC.

Main Office & Factory: Glen Cove, L. I., N. Y. NEW YORK - KANSAS CITY, MO.
CHICAGO - DETROIT - MILWAUKEE
MINNEAPOLIS - NASHVILLE
PHILADELPHIA - PITTSBURGH
PORTLAND, ORE. - CINCINNATI HARIST MORE
PORTLAND, ORE. - CINCINNATI HARIST MORE Also: London, England; Sydney, Australia

(Continued from page 228)

ing engines" circulate the washed fibres in a tile-lined vat under ponderous rolls equipped with metal bars which separate and brush out the fibres. In the "beaters" the grade and color of the paper is determined by the proper combination of ingredients.

Next the material passes through what are known as "Jordan engines" in which the fibres pass between whirling knives to become uniform in length, after which



Scene in drying room

it is ready for conversion into paper. The fibres suspended in pure water (98 to 99 percent water, 1 to 2 percent fibre) are next treated and screened through fine metal slots for the removal of all traces of dirt, and then flowed onto an endless wire belt of fine copper mesh, the fibers being retained on the surface as the water drains off. This is known as the Fourdrinier machine. As the belt moves along it is shaken laterally to interweave the fibres.

The sheet forms on the wire, and while



"Dandy Roll", which makes watermarks

it is still soft and wet it passes under a cylinder of light wire mesh known as a "dandy roll" which carries the watermark lettering or design on its surface. Contact with the design leaves the "watermark" in the sheet that permits of quick and positive brand and grade identifica-

The web of paper is formed while the (Continued on page 234)

We have mailing, our Typing costs and filing costs by using



thin papers

They are strong and durable, yet have minimum bulk. Their lightness and strength combined, allow us to make numerous clean.clear carbon copies. We use them now for Thin Letterheads on all our Branch Office, Foreign and Air Mail correspondence. We also use the distinctive colors for our office records and factory forms.

Fidelity Onion Skin Clearcopy Onion Skin Superior Manifold

SEND FOR SAMPLES

ESLÉECK

Manufacturing Company Turners Falls, Mass.

MARCE

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The SPEEDWAY of Posting!

ACCOUNTS
RECEIVABLE

STOCK
RECORDS

INVENTORY
CONTROL

APPROPRIATION
LEDGERS

TAX ACCOUNTING

It's down the stretch , . .

At the end of each month . . .

That Elliott-Fisher's speed way of posting . . . counts most.

But it's right from the start...right through each day...that the Elliott-Fisher saves important time and money for you.

Man hours and woman hours are turned to minutes. More work is sped through each day. The machine does everything. All adding, subtracting, totaling, and crossbalancing is automatic.

Your many different records are handled accurately and with dispatch. Each complete job, with its related entries, goes through in one operation.

Speed comes . . . from Elliott-Fisher's exclusive flat writing surface which provides quick insertion, alignment, and removal of forms.

... from the carbon paper roll that feeds between the sheets neatly and instantly.

...from the standard single "touch-type" keyboard, that's a cinch for every typist.

... from the short hand travel, automatic tabulating, and line spacing.

... from a dozen other time-cutting features.

It will pay you well to start your accounting on the "Speedway of Posting". Call your local Underwood Elliott Fisher office now for further information on the time and money saving performance of this simple machine.

Elliott Fisher Accounting Machines are available subject to War Production Board authorization.

Underwood Elliott Fisher Company

Accounting Machine Division

One Park Avenue, New York 16, N. Y.

Our factory at Bri Connecticut, pro the Army-Na awarded for the

Connecticut, proudly flies the Army-Navy "E", awarded for the production of precision instruments calling for skill and craftsmanship of the highest order...

Two Ways to Solve Your Product Marking Problem





Right now you're up to your ears in war production. But you probably are still thinking about a new product to be made when peace comes. You're also probably thinking about marketing that product . . . how to trademark it, package it or how to get your story across at the point of sale, among other things.

That's where Dennison comes in. Whatever your marking problem, remember there's more than a century of specialized experience at your beck and call here in Framingham. So when the time comes, put your problems up to





We'll be glad to help you plan today the special tags or labels that can be manufactured tomorrow. Present production at Dennison is given over to war work, but development work with the leaders of American industry still goes on. Evidences of past performances are given in an interesting booklet on product marking and identification. Get the coupon that will bring yours to you in the mail today.

Der	nnison	Man	ufacturing Cor	npany
79	Ford.	Ave.,	Framingham,	Mass

Please send me without obligation, booklet "If You Could Only Be at Every Point of Sale."

Name	*****
Firm	
St. & No	******
City	Zone State

(Continued from page 230)

wire travels some 30 feet in less than a quarter of a minute. Thence the moist sheet is transferred to a traveling woolen "felt" or blank which supports it as it passes between big rubber or granite rolls which squeeze further moisture from the sheet, complete drying being accomplished as the sheet weaves on through a series of steam heated metal cylinders.

As it rolls off the machine it is passed through a bath of special size or glue to give it a smooth, hard surface, and the sized sheet is further dried under controlled temperature and humidity conditions. Ledger papers are next put through a series of steel and composition rolls, known as super-calendar rolls, which iron and polish the surface on both sides, developing a perfect, smooth ledger finish.

After being cut into sheets, every single sheet is inspected and counted by hand, all four sides are trimmed to precise 90 degree corners and exact final size in a guillotine-type cutting machine, and the paper is then wrapped and labeled, ready for shipment.

Physical and chemical tests are conducted by the Weston laboratory before, during and after every papermaking operation. The paper unidergoes a regular gauntlet of tests for bursting strength, tensile strength, tear, folding, opacity, color, light stability, stiffness, ink penetration, etc. Briefly, extreme care and precision in manufacture plus rigid and increasing technical control are back of the uniform quality of the production.

ALLIED METAL PRODUCTS ACQUIRES TIFFANY STAND CO.

The Allied Metal Products Manufacturing Co., Popular Bluff, Mo., has acquired the Tiffany Stand Co., makers of stands for office machines, St. Louis, Mo. The latter will be continued as the Tiffany Stand division of the Allied organization.

LIGHTWEIGHT BOOK PAPER FINISH-ING CEILINGS INCREASED

Ceiling prices for the process of applying secondary finishing to lightweight book papers were increased by the Office of Price Administration today.

These increases, effective January 31, 1945, are 50 cents a hundred pounds when the secondary finishing is applied to book papers weighing from 40 to 54 pounds inclusive per 500 sheets 25 by 38 inches, and \$1 a hundred pounds when the finishing is applied to book papers weighing below 40 pounds per 500 sheets of the same size.

The increases can be added to the existing differentials for applying secondary finishing to normal weight book papers. These differentials, which heretofore have been each manufacturer's prices in the base period, were spelled out in uniform dollar-and-cents amounts applicable to the whole industry. They

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aphey Prominent Users of Strathmore Letterhead Papers: No. 56 of a Series



Does Your Letterhead Represent THE FINEST?

Finer than silk is the yarn from American Bemberg Corporation, used in the manufacture of better dresses, lingerie, yard goods, upholstery fabrics, gloves, hosiery, etc. American Bemberg is the only manufacturer of cuprammonium rayon in this country. Their unique "stretch spinning" device makes it possible to spin filaments finer than the finest silk.

Bemberg chooses Strathmore paper for its letterhead to carry a name promoted and advertised continually by the leading retailers of America. Your letterhead should be worthy of your name and the standing of your company. Today, when lighter weight papers are necessary under government regulations, quality is more important than ever. The Strathmore watermark is your assurance of that quality.

Strathmore Papers for Letterheads: Strathmore Parchment, Strathmore Script, Strathmore Bond, Thistlemark Bond, Alexandra Bond, Bay Path Bond and Alexandra Brilliant.

STRATHMORE OF FINE PAPERS

Strathmore Paper Company, West Springfield, Massachusetts

TODAY'S PICTURE

Current Strathmore advertising points out how essential paper is to the war effort, features leading industries that use Strathmore in their Victory programs, stresses the point that good letterheads help maintain the reputation every firm is guarding today.

* * *

This series appears in:

FORTUNE
TIME
BUSINESS WEEK
UNITED STATES NEWS
NEWSWEEK
FORBES
ADVERTISING & SELLING
TIDE
PRINTERS' INK
SALES MANAGEMENT

MARCE

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When you want to KNOW...go to an expert!



In the matter of purchasing paper, your expert would logically be your printer.

Quality is an important word to him. So much of his own reputation depends on the paper he works with.

Ask him what he thinks of Rising papers. Kind for kind, grade for grade, they're famous with printers for doing a little better job than just the average good paper—and that's a recommendation you can depend on!

The same quality standards guide the making of Rising technical papers.

Rising Paper Company, Housatonic, Mass.

Ask your printer . . . he KNOWS paper!



(Continued from page 232)

range from \$1.50 to \$2.50 per hundredweight, depending on the type of secondary finishing and the volume of papers being finished.

The added differentials are identical with those recently established for the application of secondary finishing to lightweight sulphite papeterie, a paper that is often interchangeable with offset paper, the principal book paper used when secondary finishing is applied.

(Amendment No. 6 to Maximum Price Regulation No. 451—Book Paper.)

PURE SCIENCE DEPARTMENT ESTABLISHED BY IBM

Dr. Wallace J. Eckert, Head Astronomer and Director of the Nautical Almanac Office at the United States Naval Observatory at Washington, D. C. and former professor of astronomy at Columbia University, has been appointed director of the Department of Pure Science newly organized by International Business Machines Corporation. In this post



Dr. Wallace J. Eckert

Dr. Eckert will be stationed at the IBM World Headquarters Building in New York.

The new position has been created by Thomas J. Watson, IBM president, to further the company's program to advance scientific calculation. For many years Mr. Watson and the company have made extensive contributions to scientific calculation, and it is their desire to follow out this tradition still more effectively in the future, it was stated.

Before going to the Nautical Almanac Office, Dr. Eckert was professor of astronomy at Columbia University, in which post he organized the pioneer scientific computing laboratory which later was administered by the Thos. J. Watson Astronomical Computing Bureau. Dr. Eckert has been a member of the Bureau's board of managers since its organization and is author of "Punched Card Methods in Scientific Computation." His principal field is celestial mechanics and astronomy of position.

HOT PRESS PHENOLIC GLUE

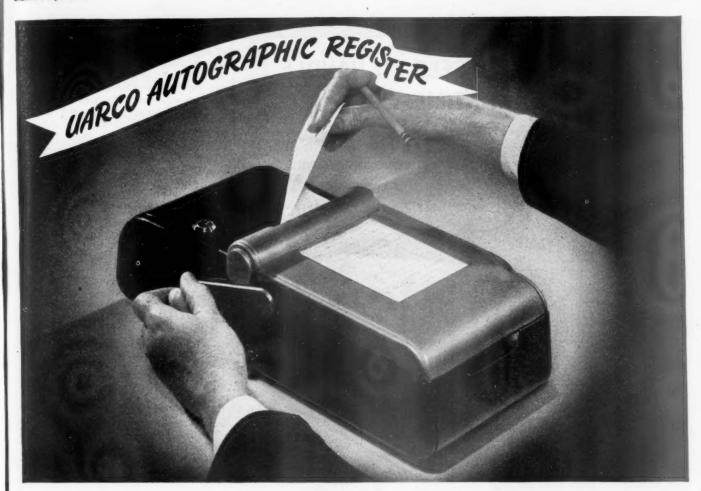
New powdered resin phenolic glue is announced by the Plaskon Division, Libbey-Owens-Ford Glass Co., Toledo, Ohio. It is known as Plaskon 810-12. It is extensible with wheat flour and thus

(Continued on page 236)

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To MAKE Business records ... that BREAK Production records

Today modern record keeping plays a vital role in the breaking of production records. And Uarco Autographic Registers hold a key position in keeping record writing at top efficiency. For these Registers offer greater speed, fewer errors and more convenience in keeping records from buying to billing.

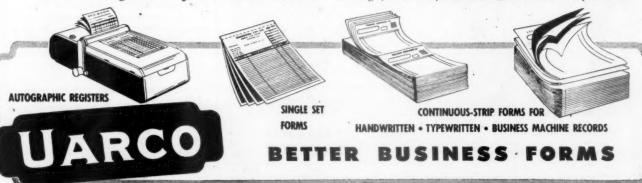
Why? Because with Uarco the forms are loaded in the Register ready for writing. Write the record—turn a crank—and out pop the needed forms . . . eliminating carbon fuss and other getting-ready-to-write operations. At one writing one person can produce an original plus many legible copies.

A firm writing base . . . plus ever-fresh carbon

paper always in place in every Uarco Register assures legibility...legibility that means fewer errors, less confusion all along the record route. The forms used in these Registers are designed to fit individual needs...forms come consecutively numbered for easy filing and finding. A duplicate copy of every record written may be automatically filed for protection.

For over 50 years Uarco has been supplying business with Autographic Registers . . . Registers that are being successfully used in every business department. For complete information, call a Uarco representative today . . . or write.

UNITED AUTOGRAPHIC REGISTER COMPANY Chicago, Cleveland, Oakland • Offices in All Principal Cities



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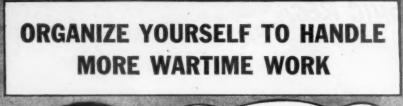
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READ THIS BOOK, JIM. IT WILL
MAKE YOU MUCH MORE
VALUABLE TO THE COMPANY

Send for this new book

Men in your company will be taking on more responsibilities this war year. They'll have to carry more of the executive load. Now is the time to fit yourself for added duties . . . and new opportunity!

Hammermill's just-published idea-book, "Pathway to Executive Success," gives you a simple, step-by-step plan for doing this. It tells how you can size up your job, crystallize your ideas, make them work for your firm and yourself.

It gives you a clear planned program that will lead you to the more important job you could—and should—be handling. It has worked for others. It will work for you. Just mail coupon. No salesman will call.

▶ Use paper and printing wisely. Choose dependable Hammermill Bond. Its quality is still safeguarded by the most exacting laboratory tests in papermaking.

PATHWAY to EXECUTIVE



(Continued from page 234)
permits unusual economy while meeting strict performance standards in plywood and furniture panel stock. Used without extension, the new glue is said to meet the most rigid requirements in water and weather resistance. Plywood made with it can be used under prolonged or constant extremes of temperature and humidity. The glue line is more resistant than the wood to the effects of fungiacids, alkalis, oil, grease, fumes and aging. Under the most severe service conditions the unextended glue outlasts the wood itself.

At its maximum permissible extension with wheat flour, equal parts of resin and flour, the new resin assures a bond that will withstand a 3-hour boil test without delamination.

The powder is said to be much more stable in storage than liquid phenolic resin. No special skill or preparation of the wood is necessary.

JOINT ARMY-NAVY SPECS ON SET-UP PAPER BOX

Pamphlet containing the new Joint Army-Navy Specifications on Set-Up Paper Boxes, known as JAN-P-133, has been published by the National Paper Box Manufacturers Association, Broad & Arch Sts., Philadelphia, Pa. The specification was prepared by the Office of the Quartermaster General in cooperation with a committee from the association.

MAGAZINE AND BOOK PAPER RESTRICTIONS

Printing paper suppliers, printers, binders, distributors, wholesalers and dealers were made subject to the War Production Board limitation orders restricting the use of paper in magazines and books by amendments of Order L-244 and L-245 issued by the WPB.

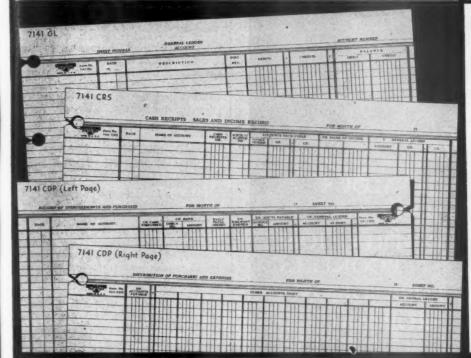
Henceforth, it will be a violation for any paper supplier to sell or deliver paper to a publisher if he knows or has reason to believe that the consumption of that paper will be in excess of the publisher's quota. Further, no person may print magazines or books if he knows or has reason to believe that such printing will be in excess of the publisher's allowable paper consumption under the orders.

In addition, no binder, distributor, wholesaler or dealer may bind, agree to purchase for resale, or accept for resale, any magazine or books which he knows or has reason to believe were printed in violation of the two orders. A person who has accepted for resale magazines or books, which he knew or had reason to believe were printed in violation of the orders, may not dispose of them except for waste scrap paper or for redelivery to his supplier.

Violations of WPB orders are punishable, upon conviction, by fine and imprisonment, it was pointed out.

Orders L-244 and L-245, as amended, also limit the use of accumulated savings (Continued on page 238)

A <u>NEW</u> Companion Series to the Consumer-Endorsed NATIONAL Unit Accounting Forms





SERIES

Unit
accounting
accounting
accounting
Forms

AS ILLUSTRATED

GENERAL LEDGER 7141 GL. Single page form both sides same. A separate sheet for each control account. Designed also for use with the 7072 Unit Accounting forms if desired.

CASH RECEIPTS, SALES AND INCOME RECORD 7141 CRS. Single page form both sides same; combination receipts, sales or income record. Two records at a glance.

RECORD OF DISBURSEMENTS, PURCHASES AND EXPENSES 7141 CDP. Double page form, right side of sheets providing for distribution of purchases and expenses; left side, combination cash and check disbursements and record of purchases and expenses. Two records at a glance.

THE COMPLETE LINE . . . 7141 SERIES UNIT ACCOUNTING FORMS

100 sheets to a box - 25 sheets per band

N	lo.	Description		Vo.	Description
7141		Record of Cash Received Record of Checks Drawn	7141	CRS	Record of Cash Receipts and Income Record
7141		Record of Invoices or Vouchers	7141	CDP	Record of Cash Disburse- ments, Purchases and
7141	RJ	Journal			Expenses
7141	BS	Bank Statements	7141	GL	General Ledger
7141	PC	Record of Petty Cash	7141	FS	Financial Statements

In the popular 9½" x 11½" size...designed for simplified and complete recording of to-day's transactions

Ruled brown and green on "eyeease" green-white high rag content ledger paper for efficiency and permanency

Punched 4 slotted holes 71/6" C to C

Designed for bookkeeping with a minimum of effort

AT YOUR STATIONER'S or write for descriptive folder No. 41 with complete information, illustrations and prices

NATIONAL BLANK BOOK COMPANY

HOLYOKE, MASSACHUSETTS

NEW YORK

CHICAGO

BOSTON

SAN FRANCISCO

MARC.

carried over from underuse of paper consumption quotas in previous periods. A magazine publisher may not use in a calendar quarter, any portion of his carryover in excess of his consumption quota for that year.

S. D. WONDERS MADE VICE PRESIDENT OF CARTER'S

S. D. Wonders, general manager of the Carter's Ink Company, Boston, Mass., was elected vice president of that company at a recent meeting of the board of directors. The vice presidency has been vacant since the retirement of Charles B. Gordon a number of years ago.

MADE EXECUTIVE ASSISTANT AT IBM WORLD HEADQUARTERS

International Business Machines Corporation announces the promotion of Edward M. Douglas, previously director of sales promotion, to the position of executive assistant at its World Headquarters in New York. He has been connected with IBM for nineteen years, mostly in sales management posts, and has served in Boston and Newark as well as in New York.

A graduate of Harvard University. Mr. Douglas is president of the Harvard Club of New Jersey; trustee of the Morristown School at Morristown, N. J.: a member of the board of managers of William Sloane House of the Y.M.C.A. in New York, and a member of the 51st Regiment, N. Y. State Guard. He has also been active as an official in New York War Loan drives, and Red Cross and National War Fund drives.

E. W. PITT MADE DIRECTOR OF SALES CENTRAL PAPER COMPANY

C. W. Smith, president of the Central Paper Company, Inc., Muskegon, Michigan, announces the addition of E. W. Pitt to the executive staff of the company. Mr. Pitt, better known to Industry as "Ed", will have the title and duties of Director of Sales. This appointment is in line with the company's expansion program and will be another step toward bettering customer relationship.

Mr. Pitt was last connected with the Sherman Paper Products Company as General Sales Manager, being with that company for 14 years.

A. L. FOARD MADE FRIDEN MANAGER AT MEMPHIS

A. L. Foard has been appointed manager of the Memphis, Tenn., branch of the Friden Calculating Machine Co., Inc., San Leandro, Calif. Mr. Foard has had long experience in the office machine field. He formerly was connected with the Royal Typewriter Company, becoming a member of its "Machine a day" club.

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(Continued on page 240)

KROYDON COVER

TOUGH SOIL RESISTANT WATER REPELLANT EYE APPEALING

CATALOGS MANUALS INSTRUCTION **BOOKLETS** PORTFOLIOS PROPOSAL COVERS

Kroydon Cover is distributed by leading Paper Merchants throughout the country

COMPANION COVER LINES TWILTEX • LEATHERCRAFT • WOODTONE

HOLYOKE CARD & PAPER COMPANY SPRINGFIELD 7, MASSACHUSETTS

these recognized Paper Merchants

> Write them for Specimens and

> > Samples

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ALLENTOWN
G. A. Rinn Paper Co.
BALTIMORE
B. F. Bond Paper Co.
BIRMINGHAM
Jefferson Paper Co.
BOSTON
Arnoid-Roberts Co.
BISTON
Arnoid-Roberts Co.
BUFFALO
Alling & Cory Co.
CHICAGO
James White Paper Co. CHICAGO
James White Paper Co.
James White Paper Co.
CINCINNATI
Chatfield Paper Corp.
CLEVELAND
Central Ohio Paper Co.
COLUMBUS
Central Ohio Paper Co.
Southwestern Paper Co.
DAYTON
Central Ohio Paper Co.
Central Ohio Paper Co.
Central Ohio Paper Co.
Central Ohio Paper Co.
Central Ohio Paper Co. DAYTON
Central Ohio Paper Co.
DENVER
Carter, Rice & Carpenter
Paper Co.
DES MOINES
Praits Paper Co.
DETROIT
Central Ohio Paper Co.
GRAND RAPIDS
Carpenter Paper Co.

Carpenter Paper Co.
HAMILTON, ONTARIO
United Paper Mills
HARTFORD
Rourke-Enc Paper Co.

KALAMAZOO

Bermingham & Prosser Co.

KANSAS CITY

Bermingham & Prosser Co.

LONDON, ONTARIO

United Paper Mills

LOS ANGELES

Zellerbach Paper Co. MILWAUKEE
Dwight Bros. Paper Co.
MINNEAPOLIS
Wilcox-Mosher-Leffholm
Co. MONTREAL, QUEBEC McFarlane Sons & Hodg-

HOUSTON
L. S. Boswerth Co.
KALAMAZOO

McFarlane Sons & Hodgson
NASHVILLE
Clements Paper Co.
NEWARK
Lathrop Paper Co.
NEW HAVEN
Storrs & Bement Co.
Rourke-Fro Paper Co.
NEW YORK CITY
Alling & Cory Co.
1 - throp Paper Co.
Miller & Wright Paper Co.
Bulkley, Dunton & Co.
OMAHA
Field-Hamilton-Smith
Paper Co.
PHILADELPHIA
Thos. W. Frice Co.
J. L. N. Smyths

PITTSBURGH
Alling & Cory Co.
PROVIDENCE, R. L.
Storrs & Bement Co.
PORTLAND, OREGON
Zellerbach Paper Co.
RICHMOND. VA.
B. W. Wilson Paper Co.
ROCHESTER
Alling & Cory Co.
ST. LOUIS
Tobey Fine Papers, Inc.
ST. PAUL Alling & Cery Co.
ST. LOUIS
Tobey Fine Papers, Inc.
ST. FAUL
Wilcox-Mosher-Leffholm
Co.
SALT LAKE CITY, UTAH
Zellerbach Paper Co.
SEATTLE, WASH.
Zellerbach Paper Co.
SPOKANE, WASH.
Zellerbach Paper Co.
SPRINGFIELD, MASS.
Paper House of New England
SAN FRANCISCO
Zellerbach Paper Co.
TOLEDO
Central Ohio Paper Co.
TORONTO. ONTARIO
United Paper Mills
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Barton, D. C.
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The purchase record that "EATS UP" food-buying problems



"We Feed the Worker"

Crotty Brothers of Boston, Mass. provide appetizing and nourishing meals for the men and women war workers in some seventy plants located in several states. Properly planned purchasing was, in the past, a task multiplied by this large number of operating divisions and the wide variety of their needs.

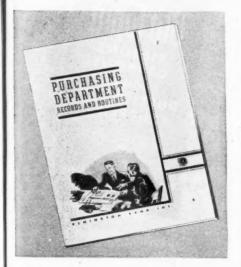
So Crotty Brothers put it up to one of our Systems and Methods Technicians to find the solution. After a careful study of every requirement, he proposed a centralized Kardex Visible Inventory Control System designed to take care of all buying for their seventy operating divisions!

With this method, rapid posting

and ready availability of all data speeded up and simplified the entire purchasing activity. A slow and cumbersome operation was replaced by a fast, easy, accurate one that functions smoothly with a minimum of work.

Says Mr. Andrew J. Crotty, Jr., President, "In these days of manpower shortage it would have been almost impossible for us to provide this service without the help and speed of Kardex."

The increased efficiency obtained by Crotty Brothers is typical of the results secured by hundreds of purchasing officials who have modernized their routines with Kardex Visible. May we furnish full details? Just call our local Branch Office.



SEND FOR HELPFUL DATA

"Purchasing Department—Records and Routines" is a recent, comprehensive, 64-page study of effective buying procedures. Ask today for a free copy of this practical manual. SYSTEMS DIVISION

REMINGTON RAND

BUFFALO 5, NEW YORK

COPYRIGHT REMINGTON RAND INC.



Never have quality products been in greater demand. When stapling equipment was needed it was only logical for the P. A. to come to ACE. These men prefer Ace Staplers because they want the smooth, efficient, dependable, lifetime operation that only Ace can give. Such unique performance is the result of precision building by master craftsmen, from the finest materials obtainable.

SOLD THROUGH DEALERS EXCLUSIVELY

ACE FASTENER CORPORATION 3415 North Ashland Ave., Chicago 13, III.



(Continued from page 238)

following which he was associated with the Undertypewriter company, and then the Burroughs Adding Machine Company. He was branch manager at Chattanooga for the Burroughs company for nine years.

4 4 4 S. E. CLARIDGE MADE SECRETARY OF HAMMERMILL

The Hammermill Paper Company, Erie, Pa., announces the election of Bertram E. Claridge as secretary of the company, succeeding William F. Bromley, retired.

WITHHOLDING TAX RECORDS

Bulletin issued by the Wilson Jones Co., 3300 Franklin Blvd., Chicago, shows complete line of loose leaf forms and bound books for every pay roll need. Forms are designed in various sizes to fit all types of loose leaf binders.

WPB-OPA DIGEST

Paper Dealers Subject to L-244, L-245—WPB—Printing paper suppliers, printers and binders, distributors, wholesalers and dealers were made subject to WPB limitation orders restricting the use of paper in magazines and books by amendments of Order L-244 and L-245 issued by WPB.

Vegetable Parchment Paper Order Clarified—WPB—Restriction covering the use of glassine, greaseproof and vegetable parchment papers have been simplified and clarified by the issuance of an amendment to the Specialty Paper Conservation Order M-286.

Paper and Papeteries—WPB—The deletion of paper stationery and papeteries from List B of Conservation Order M-241-A was intended to remove these items entirely from the order's restrictions, WPB announced through issuance of Interpretation 4 to the order.

Furniture Monufacture — WPB — Further tightening of the supply of materials for furniture production was reported by WPB officials at meeting of the Advisory Committee.

Safes, Files Production Cut—WPB—WPB reported that production of safes, safe deposit boxes and insulated files under the "spot authorization" procedure is expected to total much less than the amount authorized.

Metal Files Production Small—WPB—"Spot authorizations," under priorities regulation 25, for the production of metal lockers, shelving, visible record equipment and filing cabinets in the first quarter of 1945 represent an extremely small percentage of pre-war production of these items, and the difficulty of obtaining materials will prevent production in the quantities authorized.



"I tab each tine—it's quick to do.
Just type, snip, moisten, press it on;
Stays bright and clean—It's MAK-UR-OWN."
GENUINE - ORIGINAL

MAK-UR-OWN

Write, type or print any index,

slip into MAK-UR-OWN strip, to Use to length and attach permanently in a moment. 7 colors, 3 widths; printed sets and die-cut tobs.

At your stationers.

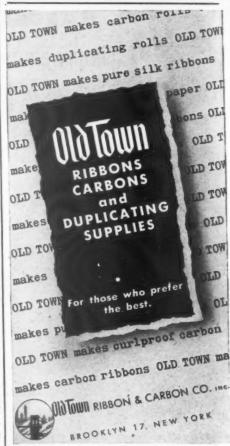
Equip every desk with

VICTOR

MAK-UR-OWN Index Tabs

THE VICTOR SAFE

& EQUIPMENT CO.



A FEW EXCLUSIVE OLD TOWN FRANCHISES STILL AVAILABLE — WRITE FOR INFORMATION

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Lithograph by James E. Allen

A STRONG PULL TOGETHER DOES IT

Concerted action on the part of us all—mill-man, distributor, printer and ultimate user—is a "must" if we are to weather the war-time paper crisis. And the record shows there has been this cooperative effort up and down the line. More careful buying, better use of paper, conservation wherever possible; these rules—the order of the day—have been followed. More of the same is still needed, though, before we reach smooth sailing ahead.

As in every tough situation, there's a glimmer of light. The careful war-time use of paper has emphasized the importance of the right paper for each job . . . a healthy indication for the industry's future. International Paper Company, 220 East 42nd St., New York 17, N. Y.



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(Continued from page 226)

ment, and the third being a pink copy which goes to the receiving department. Copies of the Matthews form are distributed as follows: blue copy for the purchasing department, white copy for the receiving department, pink copy for the production department, and white copy for the cost department.

Three Requisition Forms

Two types of requisition form are used by the Seymour Company, and one type is used by the Matthews company, all being illustrated. It will be noted that the Matthews form carries the line "Order from". Mr. Space advises that in 98% of the instances this is filled out in the purchasing department. This form may originate within four or five different departments, clearing through the superintendent or works manager who signs in the section "Approved by".

The Seymour Manufacturing Co. requisition form carrying department names at the top is used by the respective department heads when requisitioning material through the stores department. One copy is retained by the foreman. The storekeeper keeps the original, transferring the information from it to the more simple form which goes to the Purchasing Department.

Nº	5511	THE H. A. MATTHEWS SEYMOUR, CONN. To be used for one class of material or	DATE	
Pu		artment: Please order immediately		les:
Quantity		Description	Part No.	P. O. No.
		Size 8" Wide x 5"		
		SAMPLES MUST BE SUBMITTED FOR APPROVAL		
	sed by	Approved by	Reg. by	

Requisition forms used by Seymour and Matthews Manufacturing Companies.

Forum	A.97 Sm 6-64			
	REQUISITION	Nº	627	
Deer			DATE	
	THE SEY	MOU	R MFG.	CO.
Please or	rder the following, w	shich is re-	quired	
	Actual s	1ze 5 1/	8" × 8 1/2	" long
				9
				ell'ann

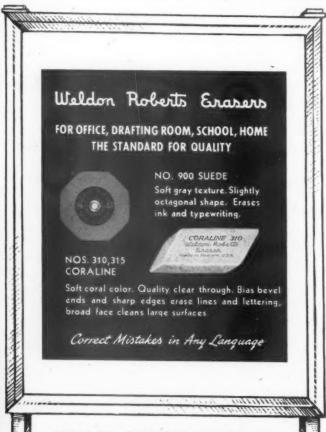
	Requisition	No i	351
Carpenter Shop	Machine Shop	Laboratory	
Oil Honor	Wire Mill	Engineer	
Casting Shop	Electrician	Superintendent	
Office	Anoda Shop	Drafting Room	
Polishing Room	Figure Dept.	Store House	
STOREKEEPER	DATE		
THE	E SEYMOUR MF	G. Co.	
PLEASE ORDER TH	E FOLLOWING		
Actus	1 size 5 1/8" x 8 1/	2" long	



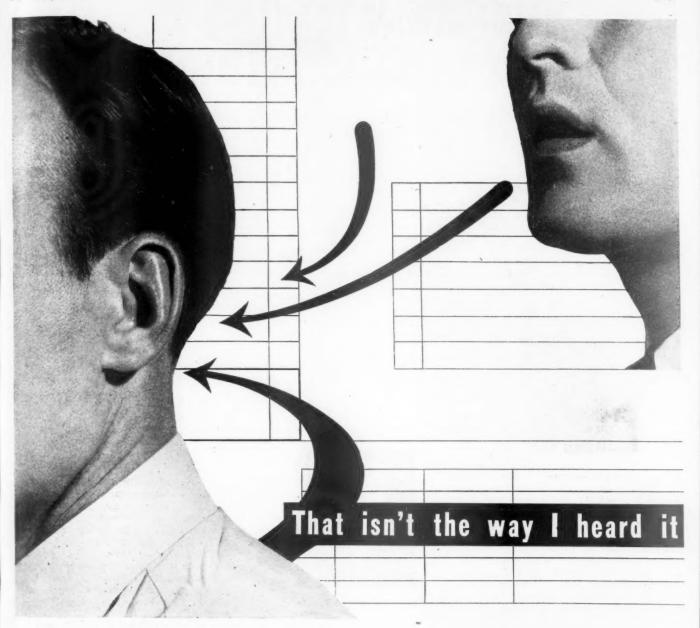
Like the WORLD FAMOUS KOH-I-NOOR DIAMOND, KOH-I-NOOR PRODUCTS have long been famous for their outstanding qualities. Whatever is required in pencil performance will be found in our exceptional quality lines.

Send for your copy of our catalog KOH-I-NOOR PENCIL COMPANY, INC.

BLOOMSBURY, N. J.



WELDON ROBERTS RUBBER CO. Newark 7, New Jersey At All Stationers



IN BUSINESS, nothing travels so fast as a mistake.

Millions of dollars a year are wasted catching up with instructions not understood, orders misdirected, carbons too faint, reports filled out incorrectly.

Time and time again a high percentage of this waste could be avoided by business forms custom-built to a business and its needs!

The nine companies listed below have long been under Moore ownership. Now they combine under the Moore name, to form the largest company of its kind in the world. They offer business large and small an unequaled fund of experience to break the bottleneck of human error.

Is this form necessary? asks the Moore specialist. Can it be combined with another? Is it functionally a part of the entire business system? Does it include all the economies and timesaving devices found practical in

related fields? Moore finds out, recommends changes, and prints the forms in lots of hundreds or millions.

A Moore specialist in your own field is ready to call on you now. He brings initiative and hard-headed business sense to your problems — whether you are a small store or a many-branched corporation. For immediate information, get in touch with the Headquarters of your nearest Moore division, as listed below, or its local office.

AMERICAN SALES BOOK CO., INC., NIAGARA FALLS; ELMIRA, N. Y.
PACIFIC MANIFOLDING BOOK CO., INC., EMERYVILLE; LOS ANGELES, CALIF.
GILMAN FANFOLD CORP., NIAGARA FALLS, N. Y.
COSBY-WIRTH MANIFOLD BOOK CO., MINNEAPOLIS, MINN.
MOORE RESEARCH & SERVICE CO., INC., NIAGARA FALLS, N. Y.
SOUTHERN BUSINESS SYSTEMS, INC., ORLANDO, FLA.

In Canada—Moore Business Forms, Ltd., succeeding Burt Business Forms, Ltd., Toronto;
Western Sales Book Co., Ltd., Winnipeg and Vancouver;
National Sales Check Book Co., Ltd., Montreal

MOORE BUSINESS FORMS, INC.

ADV. BY N. W ATE

PERSONALITIES in the NEWS

Howard R. Woolsey has been made Purchasing Agent for the Waldorf Paper Products Co., St. Paul, Minn., succeeding William Cauldwell who resigned to accept a position with another company.

T. H. Hocker has been appointed to the Vice Presidency of the G. A. Hormel Co., Austin, Minn. He formerly was Purchasing Agent, and is succeeded to that office by Robert Bateman.

V. E. Gumbleton has been appointer Director of Purchases for the Timken-Detroit Axle Co., and J. L. Griffin was made



V. E. Gumbleton

Purchasing Agent for all the firm's De troit Axle plants. Mr. Gumbleton, formerly Purchasing Agent, has been continuously connected with the Purchasing Department since he joined Timken in 1918. In his new post he fills the vacancy left by the recent death of F. H. Maisonville who was with Timken Axle for 27 years. Mr. Griffin joined Timken in 1919 and has served in various departments of the company. For the past 15 months he has been Purchase follow-up supervisor.



J. L. Griffin

C. W. Eggers continues as Purchasing Agent of the Wisconsin Axle Division and the Illinois Manufacturing Division, while H. C. Shafer will continue to serve the Timken Silent Automatic Division in the same capacity.

W. W. Gleeson, veteran executive of the Curtiss-Wright Corporation and more re-

cently Purchasing Agent for the four propeller plants in Caldwell and Clifton, N. J., Beaver, Pa., and Indianapolis, Ind., has been made vice president and general manager of the L. G. S. Spring Clutch Corporation, a wholly-owned subsidiary of Curtiss-Wright.

E. H. Allen has resigned as Division Purchasing Agent, Atlantic Division, Pan American Airways System, to take charge of purchases for Link Aviation Devices, Binghamton, N. Y. Mr. Allen has been associated with the purchasing department of Pan American for the past ten years. Prior to coming to the New York office, he was assistant to F. I. Van Heusen, then Division Purchasing Agent at San Francisco.

Lieut. Colonel Clifford R. Hale, until recently the Contracting Officer of the New York Chemical Warfare Procurement District, today assumed new duties as General Purchasing Agent for Continental Industries, Inc., New York, N. Y. A graduate of Columbia engineering school



Lieut. Col. Clifford R. Hale

Col. Hale was Purchasing Agent for Air Reduction Sales Company prior to the war.

"Continental Industries' rapidly expanding organization of small and medium sized plants demands the services of an experienced, capable general purchasing Agent", declared Chester A. Bolles, Continental's Board Chairman. "In order to effectuate our policy of economy for a group of small businesses through skilled top management and supervision, overall purchasing for a dozen or more companies takes its place in importance beside general management, legal, financial, research and labor relations. Col. Hale joins Continental with an excellent record of achievement."

Phil T. Bee has been made Regional Director of Materials, North American Aviation, Inc., Grand Prairie, Tex. Associated with him are S. J. Mulroney, Assistant Regional Director of Materials, and Chas. C. Berry, Purchasing Agent. All are members of the Purchasing Agents Association of Dallas.

A. P. Hoscoll, who has been the General Purchasing Agent, Chrysler Corporation, Detroit, Mich., has been appointed Director of Purchases of the Corporation. Joseph Pfeiffer who has been Staff Assistant Supervisor of the Purchasing Department, succeeds Mr. Hascall as General Purchasing Agent.

These appointments were made in connection with the resignation of E. L. Reason, who has been Assistant General Purchasing Agent for the past twenty years and who has left Chrysler Corporation to take a position with another company.



A. P. Hascall

Mr. Hascall has been in the automobile business all his life starting in 1910 with the W. A. Patterson Co. in Flint, Mich. as a shop man, then a few months with Marquette Buick in Saginaw in the shop, 1911 to 1915 with Studebaker in Detroit in the Inspection Department, 1915 to 1925 with the Dodge Brothers in Detroit in the Purchasing Department, finally becoming Assistant Director of Purchases, 1928 to 1930 Production Supervisor of the Dodge Plant for Chrysler Corporation and then General Purchasing Agent



Joseph Pfeiffer

for Chrysler Corporation from 1930 until his recent promotion.

Mr. Pfeiffer also has been with the automobile business all his life, having joined the Maxwell Company in Dayton in 1916 as a clerk in the Purchasing Department and working up through the different branches of the Purchasing Department for Maxwell and Chrysler

(Continued on page 246)

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MARCH,

For a ne in 176 bored to Today ods of tenance

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Witt 1940 design pump to unu fit exa with liners from tures, food

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REVOLUTION in Piston Packing

Darcova Pumcups Provide Scientific, Precision-Fitted Packing for Reciprocating Pumps and Hydraulic Pistons

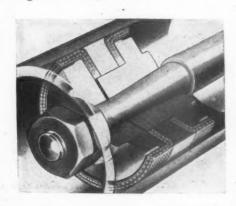
FOR centuries piston-packing has been a neglected science. Even James Watt, in 1769, was content with a cylinder bored to a tolerance of a shilling's width. Today there are just about as many methods of piston-packing as there are maintenance men.

But in 1940 Darling Valve & Manufacturing Company did something revolutionary. Darling had had forty years' experience making close-tolerance composition valve cups for oil well pumps. These cups had to work thousands of feet under ground, pumping oil through sand under high pressures, frequently under corrosive conditions. These composition cups became so well established that oil men called all valve cups by the Darling trade name, "DARCOVAS".

With this background, Darling in 1940 introduced a new, scientifically-designed pumping cup for reciprocating pumps and hydraulic cylinders. Made to unusually close tolerances, these cups fit exactly standard pumps and cylinders, with oversizes for rebored cylinders or liners. They are available in 70 sizes from 1" to 20", and come in three textures, with special sanitary finish for food or other special applications.

Installed in hundreds of plants all over the country, these cups are lasting from two to ten, sometimes even a hundred times longer than leather crimps, rubber cups, hydraulic packing, metal rings, plastic rings, and other types of piston packing. The extra service they give may extend for many months.

In scores of plants Pumcups have kept pumps and cylinders operating in tough



wartime service, and have eliminated costly delays and repairs. Pumcups successfully handle boiler feed water, sewage, brine, refrigerants, liquors, wines, milk, most alkalies and acids—practically all commonly used industrial fluids.

SPECIAL PISTONS—Darcova Pumcups can be used with standard cup-type piston design, but to enable the product to work at maximum efficiency, Darling manufactures iron, steel and bronze pistons which greatly lengthen the service and improve the performance given by Pumcups.

If you are concerned with frequent shutdowns for repacking pistons in pumps or hydraulic cylinders or if pump repacking bills and down-time are running to extremes, Darcova Pumcups can save you money and help keep your plant on stream.

Write for further information, and free Bulletin No. 4401. Or ask your local mill supply distributor about Darcova Pumcups.

NOTE THESE RESULTS:

One set of Pumcups in a Worthington pump in Illinois have lasted over 7,000 hours, have pumped more than 1,000,000 barrels of oil.

746 days wear vs. 10—Pumping butane gas in a Dean Bros. Duplex 6 x 4 x 6 hydraulic packing lasted only 10 days, the liners about 60. One set of Pumcups lasted 746 days, liners still in perfect condition.

26 weeks vs. 2 weeks — A soap manufacturer pumps spent lye and slop with Pumcups. Former packing lasted two weeks, Pumcups from six to eight months (13 to 21 times longer). This company has standardized on Pumcups.

120 days vs. 10 days—Operating soaking pit covers in a Pittsburgh steel mill, hydraulic cylinder packing lasted ten days. Pumcups last more than 120 days. This mill is equipping all hydraulic cylinders with Pumcubs.

8 weeks vs. 2 weeks—Handling abrasive lime slurry twenty-four hours a day, rubber piston cups in a 14 x 6 x 14 Gardner-Denver pump lasted only two weeks. Darcova Pumcups now last eight weeks on the average and liners last ten times longer than before.

2,000 hours vs. 20 hours—In a ceramic extrusion press, operating at 12,345 p.s.i., leather cups lasted four to twenty hours. Pumcups lasted over 2,000 hours. This plant is 100% Darcova equipped.

48 weeks vs. 10 weeks—On September 27, 1943, Pumcups were installed in one cylinder of a 3½ x 5 x 10 National Transit duplex feed water pump at Parkers Landing, Pa. Good quality, conventional by draulic packing was installed in the other. The bydraulic packing bad to be replaced after ten weeks. The Pumcups are still going strong after 48 weeks.

THE ORIGINAL COMPOSITION CUP

DARLING VALVE &

THE ORIGINAL COMPOSITION CUP

Manufacturing Co.

WILLIAMSPORT, PA.

Darling	Valve	&	Mfg.	Co.,	Dept.	H,	Williamsport, F	a.

Gentlemen: I want to know more about Darcova Pumcups. Send your free Bulletin 4401 and name of local distributor.

Name_

Company__

Address_

City___

State_



(Continued from page 244) Corporation until his appointment as General Purchasing Agent.

H. D. Hebord has been made Director of Purchases for the Buffalo Forge Co., Buffalo, New York. He has been with the company for 24 years, most of this



R. N. Johnson, formerly General Purchasing Agent, becomes Factory Manager for Buffalo Forge Co.

time in sales work. For the past three years he has been assistant to N. R. Johnson, General Purchasing Agent, who has been appointed to the position of factory manager. Mr. Johnson has been connected with the company for 28 years. The company states that his outside contacts, as well as a thorough knowledge of the company's products and manufacturing problems fit him particularly well for the new post.

John D. Tompkins is new regional director of the New England Region, Procurement Division, U. S. Treasury Department, with office in Boston. He began work with the Treasury Division in 1935. He formerly was assistant state procurement officer in Maryland and New York, procurement officer in Pennsylvania and Region 4 director at Atlanta. He also is in charge of the Office of Surplus Property Disposal.

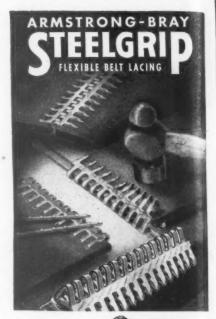
Walter H. Wenzel, long time Purchasing Agent for the Vilter Mfg. Co., Milwau-



kee, has been appointed Director of Purchases for the Twin Disc Clutch Co., Racine, Wis., succeeding E. N. Wackerhagen, retired.

Albert H. Hall, Executive Secretary of the National Institute of Government Purchasing, was one of the speakers in a round table discussion on the "American Forum of the Air" program broad-

(Continued on page 248)



Prompt Delivery!

on both standard types

STEELGRIP that is applied with a hammer that penetrates belging easily and clinches securely to make a stong, flexible smooth joint. 2-piece hinged rocker pins take up wear. In boxes or long lengths pins take up wear. In boxes or long lengths for wide belts, it com-presses belt ends and prevents fraving, 1 [sizes.

Applied with any stan-dard make lacing ma-chine, these belt hooks come on double (pat-ented) aligning cards that hold hooks in perfect alignment and prevent card end waste 6 sizes

prevents fraving, 11 sizes. 6 six
ARMSTRONG - BRAY 5378 Northwest Highway Chicag

HOOKS



Make sure that small parts, accessories and replacements are on the spot when needed by putting them in a Chase Red-Tye Parts bag and attaching them right to the product. Avoid irritation and loss of time caused by overlooked or mislaid parts.

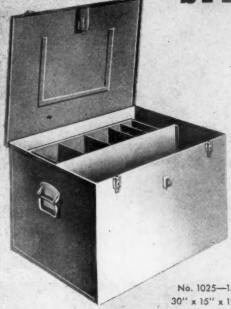
Chase Red-Tye Parts bags are available in many types and sizes ... with or without tags or envelopes attached for letter, invoice or instruction sheet.

Write for samples and prices. Also inquire about Chase Red-Tye mailing bags . . . for the quick, safe delivery of small replace-ment parts.

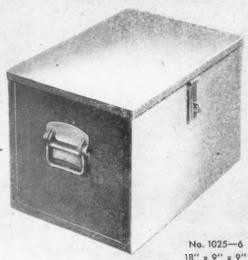
CHASE BAG CO. 302 EAST PITTSBURGH AVE., MILWAUKEE, WIS.

SPARE PARTS BOXES

...in every needed size! ...for every needed use!



No. 1025-14 30" x 15" x 12" (Partitions not included)



18" x 9" x 9"

24 STOCK SIZES

As per specification 42 B.9 (Int) for shipboard use, Electrical and Mechanical. Navy grey finish. Immediate Delivery.

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1025	18	9	6	1025-18	-	18	18
1025- 5	1	9	9	1025-19	-	12	9
1025- 6	1	12	9	1025-20		15	9
1025- 7	-	6	6	1025-23	- 00	15	12
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STEEL EQUIPMENT COMPANY 349 Broadway, New York 13, New York · Factory: Brooklyn, New York

COLE STEEL OFFICE EQUIPMENT

will again be available after the war

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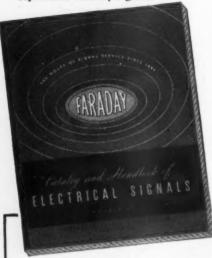
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Faraday Signals represent the peak of modern achievement in electric horns, bells, buzzers, chimes, sirens, fire alarm systems, and clock systems. There is a Faraday Signal for every industrial and institutional need. Save time, save money, save maintenance costs by using dependable Faraday Signals.



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A consolidation of Schwarze Electric Co. and Stanley & Patterson

11 S. La Salle St., Chicago 3. III.
In Canada: Burlec Limited, Toronto 13

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(Continued from page 246)
cast over the Mutual network, January
23rd. The topic was "Surplus Problems."
Other speakers included Senator Harley
W. Kilgore, Senator Homer Ferguson,
Robert Hurley, member of the Surplus
Property Board, Mason Britton, administrator of SPB, David L. Podell, counsel
for the Smaller War Plants Corporation,
and Walter R. Morrow, president of the
American Retail Federation.

Richard J. Flickinger has been appointed Purchasing Agent for Kennametal Inc.



of Latrobe, Pa. He is a graduate of Pennsylvania State College in Commerce and Finance, with 11 years experience in general banking, and for three years has been a statistical assistant to Kennametal's chief engineer.

Julius Weinstein has resigned as Purchasing Agent and production manager of Parfums Charbert, Inc., to become associated with Al Rosenfeld, Inc., New York, N. Y.

Dwight L. Borger succeeds Seymour Hull as Manager of Purchases and Material Division, U. S. Rubber Co., Los Angeles, Calif. Mr. Hull has become associated with the Sweetheart Soap Company, New York, N. Y.

Jeffrey B. Henriques, who, as announced recently in Purchasing Magazine, has been made Vice President in Charge of Purchasing and Sales for Arnold-Hoffman Co., new Industrial Chemical Sales



Division, Arnold-Hoffman & Co., Inc., which quarters in the Empire State Building, New York, N. Y.

Philip S. Cottier has been named Purchasing Agent of the Pittsburgh Steamship Co. and Pittsburgh Supply Co., both subsidiaries of the U. S. Steel Corp., succeeding John A. Boyink, who is retiring, though being retained in an advisory capacity. Edward F. Gravenstreter has been made Assistant Purchasing

(Continued on page 250)

A HALF CENTURY PLUS-THREE 1892 1945

53 years of honest service and real old fashioned workmanship in the manufacture of gears.

SIMONDS are known for quality gears. All types — cast and forged — steel, gray iron, bronze also silent steel, rawhide and bakelite.

Write for information

Distributors for RAMSEY Silent Chain Drives and Couplings

THE
SIMONDS GEAR & MFG. CO.
25th and Liberty Sts.
PITTSBURGH, PA.



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Now is the time—before your steel surplus becomes serious—to capitalize on warehouse stocks. The more Frasse tags on today's incoming shipments, the less "surplus" you'll have to worry about tomorrow.

Why? Because by buying from Frasse, you can order according to your needs—without piling up risky inventories. Frasse stocks of cold finished bars, tubing, stain-

less, alloy and aircraft steels are ample. Tonnage has more than doubled to serve war needs. By using these stocks as you go, you maintain war production, but keep your inventory low.

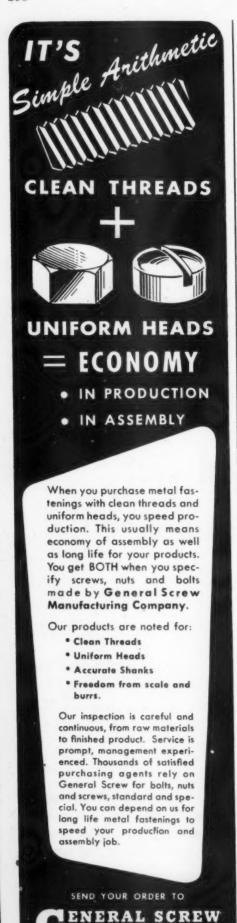
No need to be caught with dead surplus when contracts are cut or cancelled. Frasse delivery—from a wide range of sizes, shapes and grades—is immediate. Why not use Frasse inventories instead?



COLD FINISHED CARBON BARS, SHEETS AND STRIP • SAE, AISI AND NE ALLOY BARS
DRILL ROD • AIRCRAFT ALLOY BARS AND TUBING • STAINLESS STEEL SHEETS, STRIP,
PLATES, BARS, WIRE, PIPE AND TUBING • SEAMLESS CARBON AND ALLOY TUBING
SEAMLESS PIPE AND CONDENSER TUBING • WELDED CARBON AND ALLOY TUBING

PETER A. FRASSE & CO., INC. 17 Grand St., New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Ave., Philadelphia 29, Pa. (Radcliff 7100 - Park 5541) • P. O. Box 946, Buffalo 5, N. Y. (Washington 2000) Jersey City 2, N. J. • Hartford 5, Conn. • Rochester 4, N. Y. • Syracuse 2, N. Y. • Baltimore 2, Md.

MARCH



Manufacturing Company

1238 W. Monroe Street, Chicago 7, Ili., U.S.A.

(Continued from page 248)

Agent and manager of stores, a newly created post. Mr. Cottier started with the Steamship company in 1906 as messenger in the Cleveland office. He held a number of positions in the purchasing department before being promoted to the post of assistant purchasing agent in 1919. Mr. Gravenstreter was first employed by Pittsburgh Steamship in 1905 as a typist in the Cleveland office. He held a variety of positions before being transferred to the purchasing department in June 1926, where he has been a clerk and buyer until the present.

Harvey W. Auerbach, formerly Purchasing Agent for the Revion Products Corp.,



has been appointed general manager and director of operations for the American Toy Works, Inc., New York, N. Y. Prior to his affiliation with Revelon, he was associated for eleven years with Jack Pressman & Co. as Purchasing Agent and executive director.

Herbert P. Compbell has been made Purchasing Agent and office manager of Nelson Electric Supply Co., Dallas., Tex., succeeding J. B. Zimmerman, Jr.

E. T. Bogley, Purchasing Agent, Fort Worth Paper Co. Fort Worth, Tex., has been made manager of that company. He will continue to do the buying for his company.

James Swanson has been appointed Assistant Purchasing Agent, in charge of Clark Tructractor Division, Clark Equipment Co., Battle Creek, Mich., succeeding the late D. E. Leach.

Clyde M. Abel has been named Purchasing Agent, Philadelphia headquarters, South Chester Tube Co., Chester, Pa. He formerly was assistant purchasing agent.

Francis X. Lang, former Purchasing Agent for the city of Boston, Mass., has been nominated principal advisor to the City of Boston Budget Commissioner by Governor Tobin.

Hermon E. Bowers, member of the Indianapolis (Ind.) City Council, has been appointed Assistant State Purchasing Agent. He will be assistant to Capt. O. F. Heslar, recently appointed Purchasing Agent.

Mervyn W. Perrine has been made Director of Purchases, The Eisemann Corporation, 32 33rd Street, Brooklyn, N. Y. He was formerly connected with the American Bosch Corporation.

George F. Speechley has been made County Purchasing Agent, Albuquerque, N. M., succeeding John Burwinkle. He previously was district manager for the Mountain States Telephone & Telegraph Co.

Mrs. Glod Bower was named Acting County Purchasing Agent, Orange, Calif. succeeding the late C. H. Chapman.

AMONG THE COMPANIES YOU BUY FROM

American Central Manufacturing Corp. Connersville, Indiana. C. F. Hastings has been advanced to the position of sales manager. B. C. Wagner succeeds to Mr. Hastings' former position as assistant general sales manager.

Lincoln Electric Co. Peoria office. A new office, in charge of L. W. O'Day is now located in larger quarters in the Electrical Building, 214 Second Street.

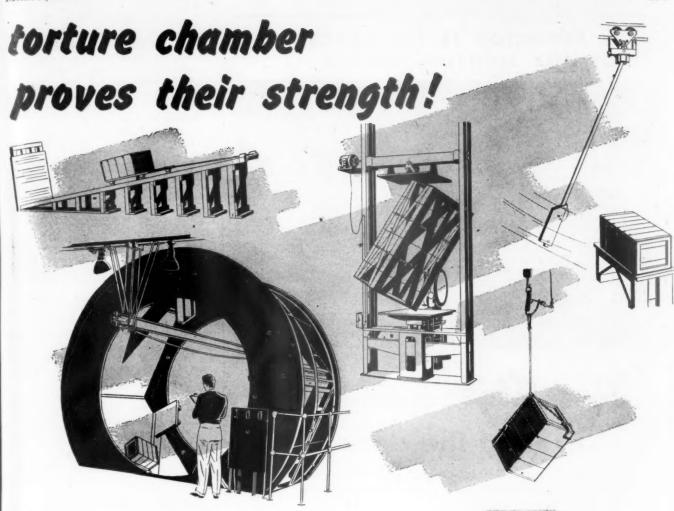
Norton Co. Worcester office. M. P. Higgins, R. M. Johnson, and F. W. Smith have been appointed vice presidents. Mr. Higgins continues as treasurer, and Mr. Johnson as general sales (Continued on page 252)



Welded Stainless Tubing

Uniformity in roundness and in quality of welding characterizes Pittsburgh Piping Welded Stainless Tubing. Available in most stainless alloys, in sizes 4" O.D. to 1434" O.D., and in wall thicknesses ranging from 7/64" to 1/2". Write for data sheet.

PITTSBURGH PIPING & EQUIPMENT CO. 10 FORTY-THIRD ST.,



● There is no doubt when you use Wirebounds—you know in advance that the box or crate designed to carry your product is exactly right! Why? Because its strength is pre-tested on numerous scientific laboratory machines.

These devices simulate stresses, strains, shocks, impacts, and overloads far in excess of those encountered in actual shipment and warehousing.

If your post-war products are through the design stage, come to Wirebound for the shipping container which will give you an added "safety-factor"!

Remember, the broad technical ability and modern testing facilities behind Wirebound are at your disposal . . . without cost or without obligation! Simply write Wirebound Box Manufacturers Association, Room 1821, Borland Bldg., Chicago 3, Ill.





Send today for your free copy of this 24-page book, "YOUR PRODUCT... How to ship it safely and at lower cost." Here are a few of the important points covered...

- how to reduce shipping charges with a Wirebound that safely eliminates excessive weight!
- save 50% or more time in assembling and closing!
- gain greater strength, eliminating costly loss and damage claims!
- save valuable space in your shipping department!

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OF ANY LIGHTING SYSTEM . . .



Scraping Dept. Gould & Eberhardt, Inc., Irvington, N.J.

"Day Skift" production around the clock!

When you give workers *Skilled Lighting* . . . the product of Wheeler's advanced engineering . . . you improve morale, bring daylight speed and accuracy to the job 24 hours a day!

That's one big reason why it's important to install Wheeler Reflectors – product of 64 years of specialized light engineering. Wheeler Units are engineered to provide maximum light from standard lamps. Their high reflection factor puts light to work where it belongs – on the job. Made of heavy gauge metal, coated with vitreous enamel, their rugged construction insures long service, easy maintenance.

Learn how these better-engineered units can bring Skilled Lighting to your production scheme. Send for catalogs showing complete line of incandescent and fluorescent fixtures. Wheeler Reflector Company, 275 Congress St., Boston 10, Mass. Also New York. Representatives in principal cities.



Available for two or three 40-watt, or two 100-watt lamps. Broad wiring channel with accessible, enclosed ballast. Can be mounted from chain or conduit, individually or in continuou runs.

RLM Solid Neck Incandescent Reflector Maximum lighting efficiency for either indoor or outdoor use. Expertly designed, ruggedly built, 75 to 1500 watts.

Distributed Exclusively Through Electrical Wholesalers

Wheeler skilled ting REFLECTORS

Made by Specialists in Lighting Equipment Since 1881

(Continued from page 250)

manager of the Abrasive Division. Mr. Smith, formerly sales manager of the Grinding Machine Divn., has been made manager of that division, with C. Denson Day, formerly assistant sales manager, as sales manager.

Notional Bottery Co. St. Paul office. H. G. Barnes has been appointed vice president in charge of sales of the company and



H. G. Barnes

P. J. Carlson

its Gould Commercial Division. P. J. Carlsen has been named vice president in charge of manufacturing of the American Container Corporation, a subsidiary of the company. Both men will make their headquarters in St. Paul.

Hercules Powder Co. Cellulose Products
Department Chicago office established as
regular branch office. F. K. Shankweiler
has been named manager of the Cellulose
Products Department. The Chicago territory includes Minnesota, Wisconsin,
Illinois, Indiana, Kentucky, and Missouri.

Allis-Chalmers Manufacturing Co. New York office. A. J. Cooper succeeds A. F.



Rolf as manager of the district office. Mr. Rolf will now devote full time to his duties as assistant secretary.

Link Belt Co. West Virginia office. New quarters are now located at Fourth Avenue & 9th Street, Huntington 9. Dave W. Stevens is district manager.

Proctor Electric Co. Philadelphia, Pa. J. I. Arnett has been appointed service manager of the eighty-one service stations maintained by the company throughout the country.

Westinghouse Electric Supply Co. Seattle office. E. W. McBratney has been named district sales promotion manager, and A. F. Sheean was made district lamp manager.

(Continued on page 254)



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Frozen Explosion

When metal is machined, pressures between the moving body of the piece being machined and the tool edge develop elastic and/or plastic forces within the workpiece. The release of tions of metal, sending them streaming forth Metal-cutting in

Metal-cutting is a matter of metal behavior and flow, in which complex process the cutting fluid regulates temperature, lubricates rubbing surfaces, prevents welding, and possibly dampens vibrations.

Stuart men are skilled in attaining the most favorable balance of these qualities in cutting for further informations.

For further information on the mechanics of metal-cutting, write for your free copy of Better Machining."



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ESTABLISHED 1865

Warehouses in Principal Metal-Working Centers

(Continued from page 252)

Okonite Co. Chicago office. A. L. Mc-Neill has been appointed manager, and will direct the company's insulated wire and cable sales in the Middle Western territory extending from Ohio to the Rocky Mountains.

Rustless Iron and Steel Corp. Detroit office. J. A. McCrane has been made field



service engineer of the Michigan and northwestern Ohio territory with headquarters in the General Motors Building

Goodyear Tire & Rubber Co. Pittsburgh office. R. G. Pauley succeeds C. A. Mathias as district manager of the Mechanical Goods Division.

Ertel Engineering Corp. Boston. J. M. Durkee has been appointed New England representative with offices at 30 Caroline Park, Waban, Mass.

Minnesota Mining & Mfg. Co. St. Paul office. B. W. Lueck has been promoted to the position of products sales manager





R. L. Westbee

of industrial "Scotch" masking tape, sandblast stencil and "Scotch-Rap". R. L. Westbee has been advanced to sales manager of electrical tape and electrical insulation products. G. N. Del Porte has become the new sales manager for shoe tape. These three gentlemen have head-quarters in St. Paul.

Continental Can Co. New York office. G. A. Turmail has been named special representative with headquarters at 100 East 42 Street.

take Shore Engineering Co. Cleveland office. New sales offices have been opened in the Union Commerce Building with J. M. Record as district manager.

(Continued on page 258)

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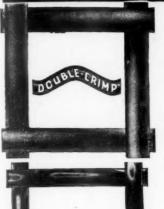
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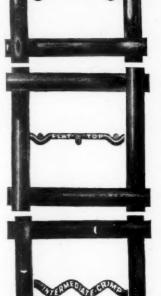
WIRE CLOTHS and WOVEN WIRE SCREENS



We have been specialists for many years in the making of precision wire cloths, wire screens and woven wire products.

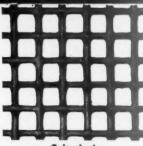
We apply our same precision principles in fabricating wire cloths into finished industrial units, for production or processing equipments or for permanent parts of countless industrial products.

We invite your inquiries for wire cloths of all commercial metals or alloys or weaves, in continuous lengths or cut to size, or processed to meet your individual requirements.

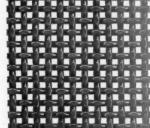


"Perfect" alloys and metals	"Perfect" Wire Cloth weaves	"Perfect" Wire Cloth processing	"Perfect" Wire Cloth products
Super-Loy Steel Galvanized Tinned Stainless Steels Nickel-Chromium Alloys Alloys Brass Bronze Commercial Phosphor Copper Monel Metal Nickel Any special alloy available in re		Bending Binding Brazing Calendering Clinching Cutting Dishing Flanging Flanging Forming Forming Forming Framing Galvanizing Painting Shearing Slitting Trimming Arc-Welding Gas-Welding	Baskets Circles Crates Cylinders Discs Forms Leaves Lengths Panels Pieces Racks Ribbons Rolls Sections Segments Spacers Strips Template shapes
or wire form	Twisted-Warp	Spot-Welding	Trays

We will follow your specifications and blue-prints exactly as your production engineers have prepared them—or we will submit suggestions for your approval.



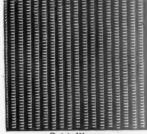




Calendare



Rek-Tan



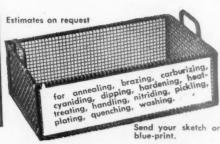
Dutch Weav

The LUDLOW-SAYLOR WIRE COMPANY

Newstead Avenue & Wabash Railroad ST. LOUIS 10, MO.









MARCH





CLUTCH HEAD Screws . . . and because the screwdriver is a universal tool . . . there need be no "stalling" in the performance of your product in the field. Even in the absence of an ordinary type screwdriver, a piece of flattened steel rod or any flat blade will do, the only requirement being that the blade be reasonably accurate in width. Because of the roominess of the CLUTCH HEAD recess, the thickness of the blade is a secondary consideration.

Note, if you please, that CLUTCH HEAD is the only recessed-head screw on the market that is specifically designed for screwdriver operation to eliminate field service "headaches" and, at the same time, to give you all the advantages of safer, faster, and lower-cost power driving on the assembly line with the CLUTCH HEAD Type "A" Bit.

> Personal examination will reveal to you many additional economy features incorporated in this modern screw. Ask us to mail you a package assortment of CLUTCH HEAD Screws and sample Type "A" Bit with fully illustrated Brochure.

Production of CLUTCH HEAD Machine Screws in regular and thread-forming types is backed by the resources

of this organization and

by responsible Licensees.



For tool economy, compare the durability of this rugged Type "A" Bit for longer continuous service . . . also for repeated "No-cost" reconditioning to original efficiency.



UNITED SCREW AND BOLT CORPORATION

other could resen Amer room cubic engir Syste prov CO₂ with

> 11 amp Exti carb exti ing

genc

form





Protected by ONE

Cardox Fire Extinguishing System

The five oil processing and storage rooms illustrated here . . . plus four others and a long pipe tunnel that could not be photographed . . . represent a major fire hazard in one of America's large war plants. All nine rooms and the pipe tunnel ... 941,140 cubic feet ... are guarded by a single engineered Cardox Fire Extinguishing System. 12 tons of liquid Cardox CO₂ provide total flooding of any of these rooms with inert carbon dioxide and CO2 snow as soon as fire strikes . . with substantial reserve for new emer-

Here is only one of hundreds of examples of how engineered Cardox Fire Extinguishing Systems utilize fast-acting, non-damaging, inexpensive carbon dioxide to provide enhanced extinguishing performance in protecting lurge and small hazards.

The enhanced extinguishing performance of carbon dioxide, as controlled and applied in Cardox Systems, is due to these four basic factors: (1) It has uniform extinguishing characteristics regardless of plant or atmospheric temperatures; (2) It is available in ample quantity for application at high rate and for total flooding (when necessary) of large areas; (3) It provides high CO₂ "snow" yield for increased cooling effect; (4) It achieves effective projection through relatively great distances—even outdoors. distances-even outdoors.

The hazards in your plant may not be as large as those shown here, but the kind of extinguishing performance that has caused Cardox Systems to be specified for guarding hazards such as these has a place in your fire protec-tion plans. Cardox engineers offer you practical cooperation. Write for details and Bulletin 2535.

CARDOX CORPORATION

BELL BUILDING . CHICAGO 1, ILLINOIS

New York • Boston • Washington Detroit · Cleveland · Atlanta · Pittsburgh San Francisco • Los Angeles • Seattle

All of the areas illustrated here represent class R hazards . . . involving vola-tile and flammable liquids. Total flooding with Cardox CO2 is applied at the highest practicable rate to create an extinguishing concentration in the minimum length of time.





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*COLOVOLT COLD CATHODE INDUSTRIAL FIXTURES



Here is the new Colovolt industrial fixture, one of a complete line of industrial and commercial "packaged" units. Equipped with the standard 93" Colovolt 10,000 hour lamp, Colovolt fixtures may be used singly or in continuous line lighting in multiples of 8 feet. Instantaneous starting, no flickering, guaranteed for 1 year except for failure due to breakage are extra advantages of the Colovolt Cold Cathode low voltage fluorescent lamp. The long life expectancy of Colovolt lamps may be realized even when constantly turned on and off, and pre-scheduled re-lamping, with no loss of production or time, is now possible with Colovolt installations.

*Trade mark regis-tered U.S. Pat. Off.

Contact your electrical wholesaler or jobber, or write us for full details and prices.

GENERAL LUMINESCENT CORPORATION 656 S. FEDERAL STREET CHICAGO 5, ILLINOIS

USE MacRae's IT PAYS TO

FOR ADVERTISING AND BOOK RATES, CONSULT YOUR AGENCY OR WRITE

MacRae's Blue Book

A DIRECTORY OF AMERICAN INDUSTRY

26 E. HURON STREET CHICAGO 11, ILL.



(Continued from page 254)

General Electric Co. Owemsboro, Ky. J. M. Lang has been named assistant manager of the Ken-Rad Division of G.E.'s Electronics Department.

Westinghouse Electric Supply Co. Southwestern district. H. B. Watson succeeds



W. G. Sterett as apparatus and supply' manager.

Girdler Corp. Cleveland office. B. R. Hopkins has been appointed East Central District Representative, with offices at 1836 Euclid Avenue.

Trumbull Electric Mfg. Co. Chicago office. L. S. Poffinbarger has been named field representative.

Wickwire Spencer Steel Co. New York office. W. J. Murray has been appointed assistant sales manager of the Fence Division with headquarters at 500 Fifth Avenue.

Rubberset Co. Newark, N. J. E. R. Brown has been named advertising man-



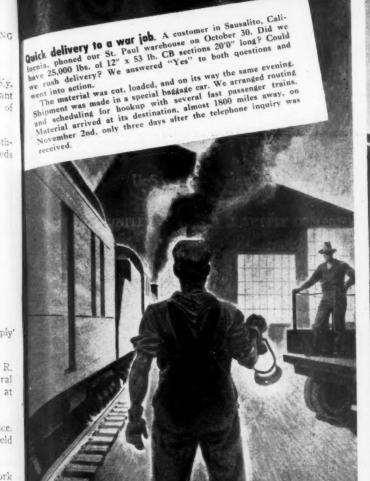
ager in charge of advertising and sales promotion.

B. F. Goodrich Co. Indianapolis and Birmingham offices. Two new districts have been established by the tire division. C. W. Cordry has been named manager at Indianapolis and D. M. Tatem at Birmingham.

Sylvania Electric Products, Inc. Philadel-phia. H. J. Martin has been appointed division manager, Lighting Products, Mid-Eastern division.

Westinghouse Electric Supply Co. San Francisco office. C. R. Matthews has been named manager of the Northern California district, succeeding E. J. Duggan, resigned.

(Continued on page 260)



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If it's service you want... Call us

UR warehouses today have large stocks and a good variety of steel available for quick shipment. When you need steel, phone, write or wire our nearest warehouse. We may be able to help you solve a production problem-avoid serious delay on a war job. Our stocks include NE Alloy Steels which have proved as good or better in many applications than steels ordinarily used. Your inquiries will receive careful attention and quick action.



1319 Wabansia Ave., P. O. Box MM BRUnswick 2000 CHICAGO (90), BALTIMORE (3), Bush & Wicomico Sts., P. O. Box 2036 GILmore 3100 176 Lincoln St., Allston, P. O. Box 42 STAdium 9400 BOSTON (34),

CLEVELAND (14), 1394 E. 39th St., HEnderson 5750 MILWAUKEE (1), 4027 West Scott St., P. O. Box 2045 Mitchell 7500

NEWARK (1), N. J. Foot of Bessemer St., P. O., Box 479 Bigelow 3-5920 REctor 2-6560 · BErgen 3-1614

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STEEL SUPPLY COMPANY UNITED STATES

NITED STATES STEEL

... and ACCO serves in the oil fields

The very first step in petroleum production calls for an Acco product—wire rope. Hazard Wire Rope is just one of the many American Chain & Cable contributions to the oil industry. Also serving in this field are Reading-Pratt & Cady Valves, Page Welding Electrodes, Wright Hoists and American Chain. Through one or more of its 15 Divisions, Acco serves at every step in the making of petroleum products as it does in practically every major industry. These are but a few of the primary products of American Chain & Cable—all of them vital in war, essential in peace.

BUY MORE WAR BONDS

AMERICAN CHAIN & CABLE · BRIDGEPORT CONNECTICUT

(Continued from page 258)

Chase Bross & Copper Co. Cleveland office. W. E. Evans has been advanced to sales manager of the Midwestern division. J. S. Coe has been appointed to the newly created position of assistant to the vice-president in charge of Cleveland operations. Waterbury, Conn. Marvin A. Joy has been appointed assistant general sales manager of the Mill Division.

Thomas A. Edison, Inc. Kearny, N. J., plant. A. A. Manchester has been ap-



pointed assistant division manager of the Emark Division plant No. 1. He will continue in charge of sales.

U. S. Gauge Co. Chicago office. W. H. Magee has been appointed district sales manager of the newly located office at 53 Jackson Boulevard.

American District Steam Co. Chicago, Ill. General Meters & Controls Co., 205 West Wacker Drive, has been appointed district representative for Northeastern Illinois and Northwestern Indiana.

Hoskelite Monufacturing Co. New York area. D. C. Greene has been transferred from the St. Louis area to the position as district manager for the company in New York.

U. S. Gouge Co. New York office. W. S. O'Connor has been named district sales manager with offices located at 233 Broadway.

Chose Bag Co. Philadelphia office. A. A. Brame has been appointed to the sales staff, covering the North and South Carolina territory.

Cornell-Dubilier Electric Corp. So. Plainfield, N. J. K. C. Burcaw has been named sales manager of the Jobber Division.

Western Gear Works. New York office established with Dean Swift as representative of the Seattle, Washington, Lynwood and Vernon, California plants and the associate plant, Pacific Gear & Tool Works of San Francisco. His offices are located in the Chanin Building, 42nd Street and Lexington Avenue.

Westinghouse Lamp Division. Boston. G. H. MacGilvray has been appointed district manager of the recently established New England District; headquarters at 10 High Street.

(Continued on page 262)

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RADIAC*
OR-OS-WAY*

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he Precision Grinding Wheel

WHEEL THAT COSTS THE MOST AT FIRST . . . COSTS THE LEAST AT LAST

NO GROAN, NO MOAN, NO GRUNT IN POR-OS-WAY SURFACE GRINDING!

Try Por-os-way segments for surface grinding. Notice the greatly increased speed, notice how quietly the cutting edges of Por-os-way dig deep into the metal. Por-os-way cuts, doesn't "scrape" the surface! Time out for dressing is greatly reduced, too!



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MARCH,

TOPS" ANYWHERE! BASTIAN'S INDUSTRIAL PARTS!

APPLICABLE TO ALL TYPES OF PRODUCTS

Whether a stove, refrigerator, an aircraft computor dial, radio or parking meter-Bastian's INDUSTRIAL PARTS in plastic or metal have what it takes to fill the bill. Plastic parts can be printed in any number

of colors-metal, in any desired finish.



Just clip the coupon below, fill in and mail to us, we'll send free booklet, prices and samples by return mail.

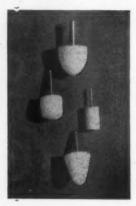
ASTIAN BROS. CO. Serving the trade since 1895

Rochester, N. Y.

NAME	
TITLE	
COMPANY	

Here they are ...

CITY



MANDREL-MOUNTED FELT BOBS

Buyers of felt bobs for the polishing, finishing and burring of metals, plastics, etc., can now obtain the well-known PARA-MOUNT Brand Bobs in permanently mandrel-mounted form and in a wide range of styles and sizes mounted on 1/8 and 1/4 inch diameter mandrels.

These mandrel-mounted bobs are a great convenience for those using portable air or electric tools, flexible shaft equipment, lathes, drill presses, etc. When one bob is worn, a new one can be quickly slipped into place. No time lost in fitting a new bob on an old mandrel. And these factory-mounted bobs are true.

Tell your production department about these new PARAMOUNT Brand Bobs and write for further information.

"America's Oldest Felt Manufacturers" Felt Does It Better

Winchester, Mass.

Established 1824

(Continued from page 260)

Kennametal Inc. Detroit office. L. K. Weeks and G. R. Gough have been added to the staff of tool engineers.

Eutectic Welding Alloys Co. Detroit office. C. F. Patterson has joined the field engineering staff to service the Michigan

Reliance Electric & Engineering Co. Minneapolis, Minn. W. S. Nott Co. has been named distributor to supplement the work of the Minneapolis district sales

Inland Steel Co. Indianapolis office. N. E. Smith has been appointed district sales



manager, with offices at 333 N. Pennsylvania Street.

Chase Bag Co. Philadelphia office. A. A. Brame has been appointed to the sales staff, covering the North and South Carolina territory.

Wickwire Spencer Steel Co. New York office. W. J. Murray has been appointed assistant sales manager of the Fence Division with headquarters at 500 Fifth Avenue.

1 1 1 NEW GENERAL ELECTRIC DISTRICT MANAGERS

Chester H. Lang, vice president and apparatus sales manager, General Electric Co., announces the following new district managers of apparatus sales to take over the duties formerly handled by ten commercial vice presidents who have become members of the president's staff looking to better co-ordinating the company's interest and improving customer relations:

Boston, New England District, C. E. H. Palmer.

Philadelphia, Atlantic District, W. J. Dorworth.

Birmingham, Southeastern District, C. L. Redd.

Cleveland, East Central District, C. W.

Chicago, Central District, R. I. Parker. Dallas Southwestern District, H. A. White.

Denver, Rocky Mountain District, F. H. Doremus.

San Francisco, Pacific District, A. G. Jones.

Portland, Northwestern District, J. R. Murphy.

New York, T. F. Barton will continue to act as New York District manager in addition to his new duties on the president's staff.

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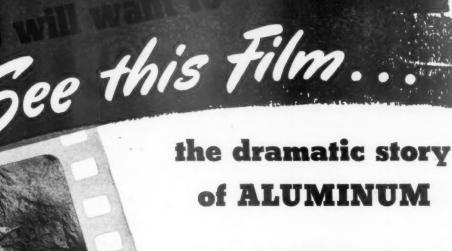
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Here is a 34-minute educational film on aluminum that is jam-packed with interesting information on its processing . . . from the mining of bauxite, refining it to alumina, reducing the oxide to metal . . . right on through to the rolling of sheet, rod and bar . . . and the manufacture of fabricated parts.

This film, titled "A Recital of Faith," portrays the great advances in aluminum technology during the war years, and the infinite possibilities for aluminum in the post-war world.

Underlined is the part Reynolds Metals is prepared to play in co-operation with engineers and manufacturers who are now using, or plan to use aluminum, and the new lightweight, highstrength aluminum alloys.

Showings easily arranged

Every audience that has seen "A Recital of Faith" has praised it in glowing terms. It is now available, without charge, for showings before technical groups, engineering societies and manufacturers . . . 35 mm. or 16 mm.

For full information, just write Reynolds Metals Company, Aluminum Division, 2500 South Third St., Louisville 1, Ky. On your letterhead, please.



REYNOLDS ALUMINUM



Metal Cutting Band Saw Blades

They are designed for fast precision work on all contour sawing, diecutting and similar operations and are adaptable for Do-All and all other die and band saw machines.

They leave a smooth edge to the work, are set so accurate that definite allowance can be made for the material which will be removed by the path of the saw. They do both straight cutting and saw around curves with accuracy.



Packaged in 100 foot coils in safety box—any length material can be drawn out, cut off and unused portion rolled back, no end left hanging out to be scratched or cut on. Window shows unused portion of coil.

STOCKED FOR YOU BY YOUR LOCAL DISTRIBUTOR

AMERICAN SAW & MFG. CO.

SPRINGFIELD 1, MASS.

Cleaning Materials Tailored To Fit!

Practically every cleaning job in your plant is different. While one job may call for the use of a certain type of cleaning material, another may require the use of an entirely different one. For this reason, there are over 70 different Oakite materials from which to choose to help you perform ALL your cleaning with the best results at lowest cost.

Warehouse stocks of these Oakite cleaning, degreasing, descaling, deodorizing and other detergent materials are maintained at strategic points across the Nation. This assures the most prompt delivery that prevailing transportation facilities permit. Each and every material is prescribed under the personal supervision of a nearby Oakite Technical Service Representative who is ready to place at your disposal the entire experience of our Chemical Research and Mechanical Engineering Laboratories. Problems invited!

OAKITE PRODUCTS, INC. 54 Thames St., NEW YORK 6, N.Y.

Technical Service Representatives Located in All Principal Cities of the United States and Canada



INDUSTRIAL DEVELOPMENTS

Thomas Steel Co., Warren, Ohio. Election of the following officers is announced: Clinton G. Thomas, chairman of the board; Charles H. Lewis, president; E. Milton Barber, executive vice president; Herman A. Mentall, vice president in charge of operations; Wm. F. Rummell, vice president in charge of sales; Wilson D. Khonle, treasurer; Albon B. Walker, secretary.

Westinghouse Electric & Mfg. Co., Pittsburgh. George S. Ryan has been appoint-



George S. Ryan

ed assistant to Vice President T. I. Phillips. C. B. Dick succeeds Mr. Ryan as manager of the Feeder Division, and E. R. Perry has been made manager of the Micarta Division.

PurOlotor Products, Inc., Newark, N. J. Executive and general offices are now located at 744 Broad St., Newark 2, N. J.

Stewart-Worner Corp., Chicago. Norman J. Cooper succeeds Max Schinke, resigned, as service manager of the electrical products division.

Elastic Stop Nut Corp. of America, Union City, N. J. John R. Munn, a director



John R. Munn

since 1927, has been chosen as president of the company to fill the unexpired term of the late Wm. T. Hedlund.

Gerotor May Corporation, Baltimore, Md., recently purchased the Cotner Machine Products Co., Logansport, Ind., manufacturers of air and hydraulic equipment for machine tools and other applications. Manager of the Logansport Divn. of Gerotor May Corp.. is John C. Cotner, (Continued on page 266)

HEAVY HEXAGONA RING NUT

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Fig. 1708 BRONZE "WHITE STAR" GLOBE VALVE

The Wm. Powell Co.

Dependable Valves Since 1846

Cincinnati 22, Ohio

POWELL VALVES

emphasized. The seat can be refaced without removing the valve from the line

For extra long life, Fig. 1708 is recommended. The seat ring and disc are made from special hard metal compositions. The hardness of the seat and disc, with their wide contact surface, tends to resist erosion and corrosion over a long period of time. Without removing the valve from the line, seats and discs can be reground to a new tight bearing and, when necessary, new ones can be easily installed.

All Powell Valves that require repacking are provided with a specially machined

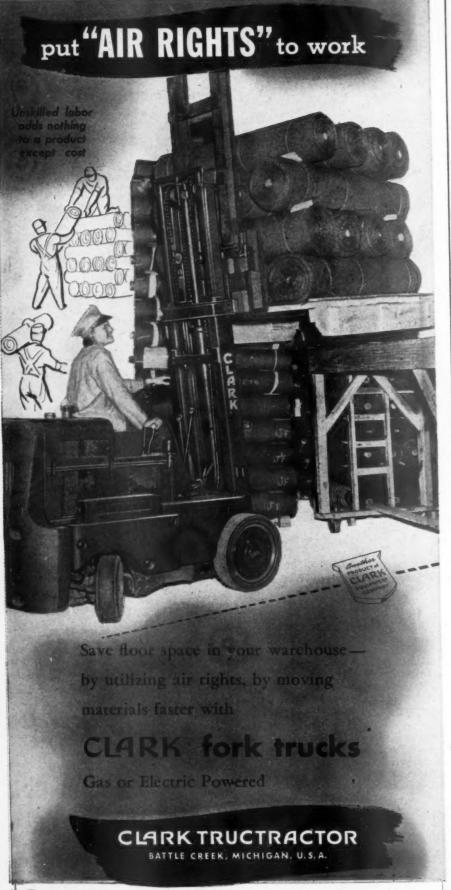
cut-off to permit repacking under pressure when wide open.

as indicated above.

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Products of CLARK . TRANSMISSIONS . ELECTRIC STEEL CASTINGS AXLES FOR TRUCKS AND BUSES . AXLE HOUSINGS . BLIND RIVETS INDUSTRIAL TRUCKS AND TRACTORS . HIGH-SPEED DRILLS AND REAMERS METAL SPOKE WHEELS . GEARS AND FORGINGS . RAILWAY TRUCKS (Continued from page 264)

organizer of the Cotner Company, and vice president and director of Gerotor, Rupert Esser is assistant general manager and chief engineer; T. W. Witters, factory manager; Don Thomas, sales and engineering; Jack Marsh, sales. All were formerly connected with the Logansport Machine Co. Plans for increased facilities at Logansport are in the building stage.

Girdler Corp., Louisville, Ky. George O. Boomer has been elected president, suc-



George O. Boomer

ceeding Walter H. Girdler, Sr., who passed away recently. He will also remain as vice president and a member of the board of directors of the firm's affiliate, Tube Turns, Inc.

Lunkenheimer Co., Cincinnati, Ohio. Eshelby F. Lunken, president, passed away recently of a heart attack. He was 54 years of age. He had been connected with the company for 35 years and served as president 26 years.

Dresser Industries. Stockholders of Kobe, Inc., Huntington Park, Calif., have approved transfer of the assets and business of the company to Dresser Industries, Inc., Cleveland, Ohio. Dresser companies on the West Coast now number

Tube Turns, Louisville, Ky. R. E. Fritsch, vice president, has been elected president.



R. E. Fritsch

He continued as vice president and a member of the board of directors of The Girdler Corp., of which Tube Turns is an affiliate.

Walter Kidde & Co., Inc. The Specialties Mfg. Co., Bloomfield, N. J., a wholly-owned subsidiary of Walter Kidde & Co., Inc., has been renamed the Kidde Manufacturing Co. Headquarters will remain in Bloomfield.

(Continued on page 270)

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If you want to reduce valve maintenance time on lines where frequent cleaning and inspection are required—specify Walworth Fig. 709, the bronze-mounted Iron Body Saddle Style Wedge Gate Valve.

Easy to take apart because of its U-bolt body-tobonnet connection, this valve permits quick inspection, easier cleaning, and rapid re-assembly, and can be repacked under pressure in either the open or closed position. It is recommended for general use on steam, gas, gasoline, water, oil, and process lines, and is especially suited for lines carrying sludge, fluids of high viscosity, or mixtures which might have a tendency to clog under the disc or between the valve seats.

Walworth Fig. 709 is made with bronze wedge, seat rings, stuffing nut, gland, bonnet bushing, stem and stem nut. The bonnet and body are made of cast iron.

Two drain holes located inside the bonnet permit the line fluid to drain off when the valve is open, thus eliminating the danger of serious damage due to freezing. This valve is furnished with either screwed or flanged ends, in sizes from ½" to 4".

All Iron Valve

For services where line fluids are corrosive to bronze trim, Walworth offers Fig. 711, an iron body valve which has malleable iron wedge disc and stuffing nut, and steel gland and rising stem. This valve is available in sizes from ½" to 4" (Screwed), and 1" to 4" (Flanged).

For further information on these Walworth Valves — and details on Walworth's complete line of valves and fittings — write on your company letterhead for a free copy of Catalog 42.



BOSTON WORKS KEWANEE WORKS

WALWORTH

valves and fitting
60 EAST 42nd STREET, NEW YORK 17, N. Y.



DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

MARG

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E-JECT-O, drain opener manufactured by the United Gilsonite Laboratories, Scranton, Pa., has a terrific attraction for moisture, yet economy demands it be packaged in unsoldered cans. So, it is packaged in Crown cans - because, after repeated tests, Crown lap-seamed cans outperformed the field . . . proved the perfect barrier against dampness. Thus, E-ject-o retains its potency, assures customer satisfaction. Making cans that mean satisfaction to you, to your customers and their customers is Crown's way of doing business.





GREAT STRENGTH—HIGH DUCTILITY

These Two Important Properties

These Two Important One Great Steel

Are Joined in One Great Steel

There are many steels that offer high yield strength; there are others that provide good ductility. It is the combination of both desirable properties in N-A-X High-Tensile Steel that makes possible exceptional economies in the design and fabrication of stressed parts. N-A-X High-Tensile Steel is proving its worth in varied war equipment and in essential civilian products . . . bringing to manufacturers the advantages of easy cold-forming, excellent weldability, great strength, and high resistance to impact, wear and fatigue. It is one of America's most useful steels.

N-A-X ALLOY DIVISION

GREAT LAKES STEEL

Corporation

DETROIT 18, MICHIGAN . SALES OFFICES IN PRINCIPAL CITIES UNIT OF NATIONAL STEEL CORPORATION

GREAT STEEL
FROM
GREAT LAKES

N-A-X 9100 SERIES STEELS for shallow or medium hardening requirements, and N-A-X X-9100 Series Steels (molybdenum-bearing) for depth hardening requirements, provide an all-purpose analysis to yield properties in both carburizing

and constructional ranges of carbon.

N-A-X ARMORPLATE, used in practically every type of landing craft and in scores of combat vehicles, gives evidence of the strength and ruggedness that characterize N-A-X low-alloy steels.



War production experience proves you can maintain volume and quality - with big savings . . .

With portable, compact Delta-Milwaukee Machine Tools you can revise production line layouts at will, to get the best sequence of operations for increased man-hour output.

You can modernize obsolete machines by replacing worn units with standard, low-cost Delta components.

And you can build high-production, special-purpose machines -

that can be quickly converted to other uses, when changing conditions warrant—out of regular stockmodel Delta elements.

By cutting down your fixed investment, you retain more liquid working capital for other post-war needs ... and you reduce fixed overhead. Delta cost savings are due to a new conception of tool design and to modern production methods applied to a large volume of standard models-not to short-cuts in quality.

Avoid the unnecessary delay and investment risk of buying costly,

cumbersome, inflexible machines . . . with Delta tools. Investigate!

Delta's 76-page Blue Book provides 140 case histories of valuable war production experience that may suggest similar money-saving peacetime applications in your plant. Also available is a catalog of low-cost Delta-Milwaukee Machine Tools. Request both, using coupon below. Tear out and mail today!



THE DELTA MANUFACTURING CO. 712C E. Vienna Ave., Milwaukee 1, Wis.

Please send my free copies of Delta's 76-page Blue Book and catalog of low-cost machine tools.

Name	Position
Company	
Address	

(Continued from page 266)

Portable Products Corp., Pittsburgh, Pa., has acquired the assets, goodwill, name and patents of the C. J. Tagliabue Mfg. Co., Brooklyn, N. Y. The business will be operated as a separate division. Portable has plants in Newburgh, N. Y., Philadelphia and Pittsburgh, Pa.

Morck Brush Mfg. Co., San Francisco, Calif. The company's plant which was badly damaged by fire late in November has been rebuilt and has resumed production.

Solar Electric Corp., Warren, Pa. That is the new tradestyle of the Warren Lamp Co. Corporation officers, etc. remain unchanged. Old name was felt to be no longer indicative of the company's manu-

Worthington Pump & Machinery Corp., Harrison, N. J. Clarence E. Searle has been



Clarence E. Searle

elected president to succeed Harry C. who was elected vice chairman Beaver of the board of directors. Hobart C. Ramsen was elected vice president in charge of operations; Edwin J. Schwanhausser, vice president in charge of sales; and Leslie C. Ricketts, manager of the Harrison Works, was elected a vice president.

Rohm & Hoos Co. of Philadelphia announce removal of New York City office to 11 West 42nd St., with D. S. Plume and H. L. Stauffer in charge. William Torres of Woodbury, Conn., will cover New England sales with Harry E. Holmes.

J. A. Zurn Mfg. Co., Erie, Pa., has acquired The Bennett Fittings Co., Huntington Park, Los Angeles, Calif.

Hewitt Rubber Corp., Buffalo, N. Y. Announcement is made that the company will enter the field of latex foam and molded rubber articles for use in industry. Hewitt is one of the joint operators of National Synthetic Rubber Corp., a government-owned plant at Louisville,

The Beryllium Corp. of Pennsylvania, Reading, Pa., announces the reopening of its Chicago sales office at 205 West Wacker Drive. Thomas E. Neal is district man-

(Continued on page 272)

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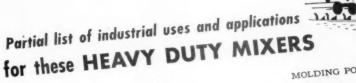
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Meading Machines struthers wells NORTHMASTER



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ABRASIVES
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BATTERY BOXES BATTERY PASTES BOWLING BALLS BRAKE LININGS BURIAL VAULTS

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CARBORUNDUM
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ELECTRICAL COMPONENTS
ELECTRODES
EMERY MASSES
ENAMELS
ETHYL CELLULOSE
EXPLOSIVES

FERTILIZERS
FIBRE BOARD
FILMS
FLOOR COVERINGS
FOODS
FOUNDRY SANDS
FURNITURE MOULDINGS

GASKET MATERIALS GRAPHITE GREASES GRINDING WHEELS GUN POWDER GUTTA PERCHA

HARD RUBBER INSULATED WIRE INSULATING MATERIALS

LACQUERS LEAD COMPOUNDS LICORICE LINOLEUM LITHOPHONE LUBRICANTS

MACARONI MARGARINE MATTING METAL POWDERS MILK POWDERS MILK PRODUCTS MINERALS MOLDED PRODUCTS

MOLDING POWDERS

PACKINGS PACKINGS
PAINTS
PAPER PRODUCTS
PAPER PRODUCTS
PENCIL MASSES
PHARMACEUTICALS
PIGMENTS
PILL MASSES
PLASTICS
POWDERS
PRINTING INKS
PUTTY

RAYON REFRACTORIES RESINS ROOFING MATERIALS RUBBER CEMENTS RUBBER COMPOUNDS RUBBER PRODUCTS

SAUSAGE CASINGS
SEALING COMPOUNDS
SHOES
SIZINGS
SMOKELESS POWDER
SOAPS
STORAGE BATTERIES
SYNTHETIC RESINS
SYNTHETIC RUBBER
SYNTHETIC YARNS

TAPES
TEXTILES
TIRES AND TUBES
TOOTH PASTES

VARNISHES VISCOSE

WELDING ROD COATINGS WRAPPING MATERIALS

YEAST



Home Furnishings . Building Materials

Descriptive **Bulletin** on Request

WELLS CORPORATION

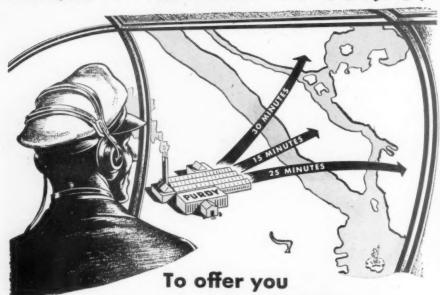
NORTHMASTER DIVISION, TITUSVILLE, PA.

Plants at TITUSVILLE, PA. and WARREN, PA.

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MARCE

PURDY'S MOVING TO JERSEY



more steels and faster deliveries

Any plant in Metropolitan New York can get deliveries on a huge variety of steels—in one day—from Purdy's new warehouse at Lyndhurst, N.J. 50,000 square feet housing a much greater inventory . . . a private railroad siding, plus the latest handling equipment, assure double-quick shipments. Call a Purdy sales engineer to help you crack tough problems of applications and methods.

a. R. Purdy Co.

790 Greenwich Street New York City
Lyndhurst, New Jersey

COLD FINISHED STEELS . SPRING STEELS . TUBING
TOOL STEELS . DRILL ROD . COLD ROLLED STRIP STEEL

WITH the dawn of the New Year, we entered the century of the founding of our business by Samuel Curtis, great-grandfather of the present members of the firm. Through four wars and six major depressions we have continued to function since, on the original site of the first factory, always with descendants of the founder actively engaged. This is a test of STABILITY and efficiency seldom equalled in the annals of business, our credential of understanding service, and ability to produce Boxes of Standard Quality.

New York Office: 342 Madison Avenue, Murray Hill 2-2876

(Continued from page 270)

Pittsburgh Plote Glass Co. H. E. Zoll has been appointed manager of the company's Philadelphia warehouse, succeeding H. R. Kluth recently named General Manager of Warehouses with headquarters in Pittsburgh.

MERIT AWARDS ARMY — NAVY — MARINE



Farr Company, Los Angeles, Calif. Receives Army-Navy "E" Award.

Peubody Engineering Corporation, New York, N. Y. Maritime "M" award and the Victory Fleet Flag.

Barker & Williamson, Upper Darby and Lansdowne, Pa. Army-Navy "E" burgee.

Victor Chemical Works, Chicago, Ill. Fourth renewal of Army-Navy Production award for the Mt. Pleasant plant.

S. Blickman, Inc., Weehawken, N. J. Second star for Army-Navy "E" pennant.

Inca Mfg. Division of Phelps Dodge Copper Products Corporation, Fort Wayne, Ind. Fifth Army-Navy "E" award.

Skilsow, Inc., Chicago, Ill. Third white star added to the "E" flag.

Forr Company, Los Angeles, Calif. Army-Navy "E" award.

Moll Tool Co., Chicago, Ill. Third renewal of "E" award.

Thew Shovel Co., Lorain, O. Army-Navy "E" production award.

N. A. Woodworth Co., Ferndale, Mich. Third star added to "E" pennant.

Cochrone Corporation, Philadelphia, Pa. Second star for "E" flag.

Sherrill Research Corporation, Peru, Ind. Army-Navy "E" award.

Sylvania Electric Products, Inc., Emporium, Pa. Army-Navy "E" pennant for the Brookville, Pa., plant.

Goodyear Clearwater Mills, Decatur, Ill. A white star for the Army-Navy "E" flag.

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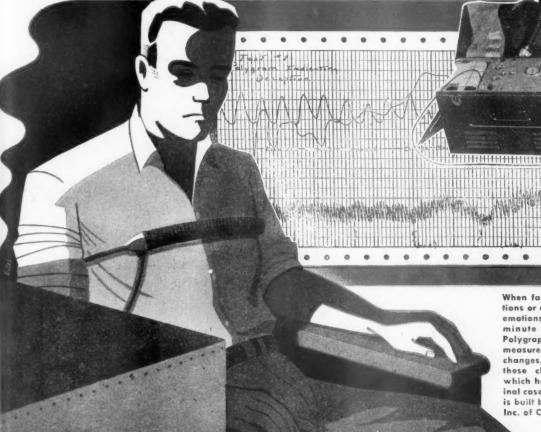
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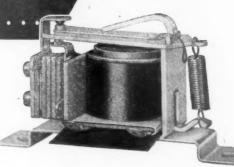
When faced with certain situations or conditions affecting the emotions, the body undergoes minute changes. The Keeler Polygraph (Lie Detector) detects, measures, and evaluates such changes. Recorded on a graph these changes provide clues which help solve baffling criminal cases. The Keeler Polygraph is built by Associated Research, Inc. of Chicago.

wherever a tube is used

THERE'S A JOB FOR Relays BY GUARDIAN

The Series 120 A-C Relay by Guardian is used in the Keeler Lie Detector as a control device for the amplifier in the electro-dermal recording section of the machine. This is a small, sensitive relay operating on any standard voltage up to 230 volts A-C. on any frequency between 20 and 150 cycles. Average power requirement of the Series 120 is 2 VA although where low current drain is an important factor, this may be reduced to a minimum of 0.2 VA.

This relay is especially designed for sensitive control of small circuit combinations where only a minimum amount of space is available. It is available for D-C operation in Series 125. Write for Bulletin No. 120 for A-C, or Bulletin 125 for D-C.



Series 120 A. C. Relay

Consult Guardian whenever a tube is used-however-Relays by Guardian are NOT limited to tube applications but are used wherever automatic control is desired for making, breaking, or changing the characteristics of electrical circuits.

1635-C W. WALNUT STREET CHICAGO 12, ILLINOIS

A COMPLETE LINE OF RELAYS SERVING AMERICAN WAR INDUSTRY

MARCI

A CROSS V MESSAGE



* When the big crosses originally furnished on an important oil refinery job began to show signs of failure the contractors (one of the biggest and best firms of refinery engineers and contractors in America, by the way) decided to replace them with wrought and forged fabricated units.

Like so many other difficult and exacting jobs this one was turned over to Taylor Forge, and the cross pictured above is one of a number made of seamless carbon moly tubing furnished by the contractor. The outlets are integrally formed to close tolerances. The run ends will be beveled like the outlets and Taylor Forge Flanges welded to both ends of the run and to the outlets. Perhaps in a later issue of this magazine we can show you the complete unit.

HANDLING jobs like this is a matter of knowing exactly how hot metal behaves and how to control its movements under pressure and impact. That knowledge, acquired through 40 odd years of experience and continuous research, is Taylor Forge's biggest single asset. It enables us to make WeldELLS and other Taylor Forge Welding Fittings exactly what they should be-to place the right amount of reinforcement just where it is needed, to provide tangents which keep the weld away from the most highly stressed zone. In short, to make WeldELLS the fittings that "have everything".

TAYLOR FORGE & PIPE WORKS, General Offices & Works: Chicago, P.O. Box 485 New York Office: 50 Church Street Philadelphia Office: Broad Street Station Bldg.

WeldELLS alone combine these features:

- · Seamless greater strength and uniformity.
- Tangents-keep weld away from zone of highest stress-simplify lining up.
- · Precision quarter-marked ends -simplify layout and help insure accuracy.
- · Selective reinforcement provides uniform strength.
- · Permanent and complete identification marking-saves time and eliminates errors in shop and field.
- Wall thickness never less than specification minimum -assures full strength and long life.
- · Machine tool beveled ends—provides best welding surface and accurate bevel and land.
- The most complete line of Welding Fittings and Forged Steel Flanges in the World — insures complete service and undivided responsibility.



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FAMOUS SQUEEZ-GRIP VALVE FOR PORTABLE EXTINGUISHERS

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WHEEL TYPE EXTINGUISHER

PRESSURE OPERATED
FIRE EXTINGUISHING SYSTEM

PROTECTION NOW AVAILABLE

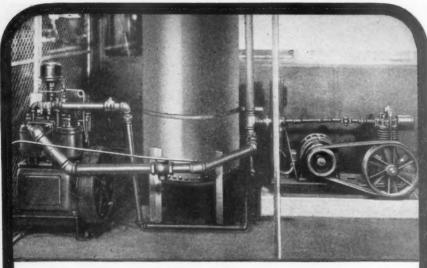
At long last, C-O-TWO Modern Fire Equipment is available for industry in general. Many enterprising manufacturers know now that this all-out fire protection assures fast, positive fire-killing . . . without damage to materials or machinery. No clean-up or mop-up after a fire and no shut-down.

C-O-TWO smoke detecting and carbon dioxide systems, hand and wheeled units, hose rack and hose reel extinguishers have had a successful work-out with the Armed Forces. The trial by fire under the most exacting demands of war has proven that C-O-TWO can take it and hand it out. Write for particulars.

C-O-TWO Kills Fire . . . Saves Lives It's Safer — It's Faster — It's Modern

MARCH

Water



At Parker Pen Factory

CURTIS COMPRESSORS

Deliver 60 cfm of Air at Low Cost of only 12c per hour

Using two Curtis Air Compressors, the Parker Pen Company factory at Janesville, Wisconsin, uses air for a variety of jobs in their factory.

Air is being used to replace noisy blowers on gas furnaces, to operate air valves on various special machines—such as operating a high speed internal grinder and operating ejectors to clear work from 20 punch presses, blowing dust out of dies, and for cleaning up around automatic screw machines.

Compressed air also controls the "dry pipe" sprinkler system, eliminating the possibility of water lines freezing.

D. A. McLaughlin, Supt., states that "the power cost on our larger Curtis Compressor does not average over 36c a day for three hours' operation, making our cost for air remarkably low. The operation of these Compressors, with no repairs and only ordinary oiling and cleaning — has been so satisfactory that we are highly pleased with Curtis Compressed Air Service."

Here is just another example of the dependable, efficient service you can expect from Curtis Air Compressors...the result of such experienced design features as:

TAPERED ROLLER BEARINGS CARBON-FREE DISC VALVES
CENTRO-RING LUBRICATION AUTOMATIC PRESSURE UNLOADER
PRECISION CONSTRUCTION THROUGHOUT

Write for our free booklet
"How Air Is Being Used in Your Industry."

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WPB-OPA DIGEST

Tin Authorizations Cancelled—WPB—All outstanding authorizations for the use of tin that existed prior to September 1, 1944 have been cancelled in a step to conserve a diminishing tin stockpile, WPB reports. On December 30, 1944, WPB stopped the sale of jewelry containing tin, effective March 1, 1945.

Southern Pine Priced by Exact Lengths—OPA—Producers of Southern pine lumber have been authorized by the OPA to price all Southern pine lumber except finish grades on the basis of the exact lengths shipped.

Aluminum Allotments—WPB—Allotments of aluminum made by the Aircraft Scheduling unit of Aircraft Resources Control Office will hereafter be made in terms of specific forms and shapes rather than merely in terms of "Aluminum."

Point Allotments for Industrial Users—OPA—Industrial users of rationed foods who began using lard, shortening, or salads and cooking oils during the 1944-45 period when they were point free may obtain point allotments for these items by applying to their local War Price and Rationing Boards.

Aluminum Inventories Tightened—WPB—Inventory restrictions applicable to users of aluminum sheet, strip and plate have been tightened because of heavy demands for these forms of the metal in aircraft production.

Machinery Pamphlet Issued—OWI—The Surplus Property Board announced that a pamphlet containing section IX of the handbook of Standards for Describing Surplus Property is available at the Superintendent of Documents at a price of 15 cents a copy. Section covers industrial and service machinery and equipment.

Wants Orders Identified—WPB—Proper identification of orders for motor control equipment for top urgency war production programs is essential if prompt delivery is to be accomplished, members of the Electric Industrial Control Advisory Committee told government officials.

Hickory Dimension Blanks—WPB—Difficulty in obtaining sufficient quantities of logs and lumber to meet requirements for hickory blank dimension was reported by members of the Advisory Committee.

Nonessential Lead Products—WPB—Manufacturers and distributors of specified nonessential products containing lead are prohibited from further sales of such products after February 28, 1945, in the third amendment to Order M-38 issued to conserve lead for war needs.

Uses of "Free" Silver-WPB-Distinctions between the use of treasury "free" silver and domestic silver have been removed by (Continued on page 278) NG

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And users tell us that FILMONIZE Tape does it better yet. It has no "curl back"—no tangle—no waste. It stands the gaff longer—on or off the roll—and even under the most adverse conditions. It seals instantly, without water—speeds production—cuts down costs.

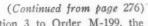
Are you making full use of tape?

Let your distributor tell you how others use it—and you're bound to see some excellent applications for it in your own shop. Look at the complete FILMONIZE line—Transparent Tapes, Colored and Multi-Colored Tapes, Printed Tapes, Riveting Tapes, Identifying Tapes, Splicing Tapes, Acetate Fibre Tapes, Metal Tapes, Specialty Tapes. All in widths of $\frac{1}{2}$ " to 18".





MARCE



Direction 3 to Order M-199, the WPB announced. "Free" silver is silver that has been sold by the treasury department upon approval of WPB. It can now be used for any purpose for which domestic silver could formerly be used.

PR-25 Limited by Military Needs—WPB—Although Priorities Regulation 25, the "spot authorization" order, has not been revoked, its use has been limited by military needs, and activity under it must be restricted until the present situation loosens up, the WPB warned.

Steel Costings Get Price Increase—OPA—The OPA announced an increase of four per cent in the ceiling prices for all manganese steel castings.

Fiber Containers Uses Reduced—WPB—A five per cent cut in the use of new fiber shipping containers for non-military purposes has been ordered by the WPB through amendment of Limitation Order L-317. This limits the quarterly use of such containers to a number that will require only 95 per cent of the total containerboard in the containers lawfully used by a packer in the corresponding quarter of 1944.

Lead for Copper Wire Insulation Limited—WPB—Limitations have been imposed on the amount of lead that may be used as a protective sheath in the manufacture of insulated copper wire and cable.

Tightens Lead Control—WPB—Further tightening on less essential civilian uses for lead to allow for war needs was announced by WPB in an amendment to Order M-38.

Charles L. Harding Appointed PAW Director District 1#-PAW-The appointment of Charles L. Harding as district director-in-charge of Petroleum Administration for war operations in the East coast states was announced by PAW. Mr. Harding succeeds the late J. D. Collins who passed away recently. The new director is on leave of absence from the legal staff of the Socony-Vacuum Oil Company.

Machine Tool Distribution Tightened—WPB—Distribution of machine tools on unrated orders has been tightened by an amendment to General Preference Order E-1-b, in order to increase the flow of the critical equipment to war requirements, the Tools Division of the WPB announced.

Delays in Drum Sheet Metal Deliveries—WPB—Drum sheet metal is becoming more critical and some delays in deliveries from the mills may be expected, the Steel Shipping Container Industry Advisory Committee was told by WPB officials.

Unit Heaters Limited—WPB—Delivery of unit heaters for extended surface heating will be limited to orders with ratings

(Continued on page 282)

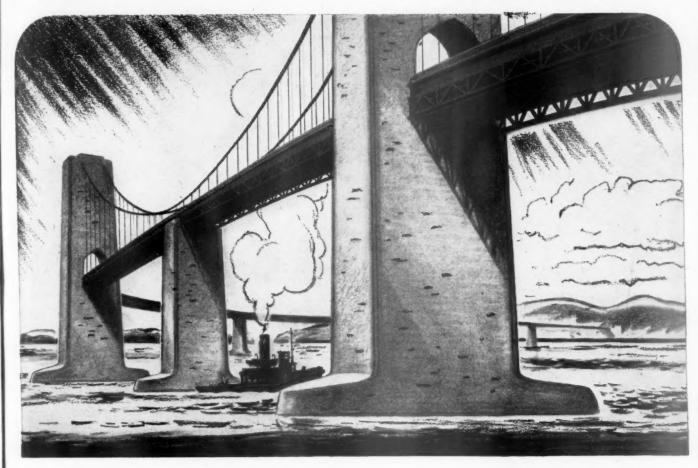


THE KNOWN precision gauge of laminations in the solidly bonded Laminum shim makes machining unnecessary in fitting machine parts. But consider this too . . . it assures accuracy by preventing errors (sometimes spoilage) due to inexperience. Want performance data?

Laminum shims are cut to your specifications. For maintenance. Lowever, shim materials are sold through industrial distributors.

Laminated Shim Company, Incorporated





CUSTOM BUILT for SERVICE

For downright day-to-day superior service there is no container to compare with the set-up paper box. These boxes are engineered to fit your particular problem by men whose unique ingenuity has been bred by years of solid, industry-wide experience during peacetime, and vastly accelerated by the innovations of war.

These men are ready and eager to apply their time and talent to a constructive analysis of your present package, regardless of whether you require sheer, structural strength; distinctive product-identity; economy of packing and shipping . . . or downright sales-appeal! Set-up paper boxes have these qualities . . . and more, and only set-up paper boxes have ALL these points of superiority! It will pay you to investigate their unlimited possibilities. They're "custombuilt" for YOU!

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Bicknell(FullerPaperBoxCo.
Brooklyn, M. Y.
E. J. Trum Co., Inc.
Buffalo, N. Y.
Thoma Paper Box Co., Inc.
Charlotte, N. C.
Charlotte, N. C.
Chicago, Ill.
Kroeck Paper Box Co.
Columbus Paper Box Co.
Co

Meriden, Conn.
Shaw Paper Box Co.
Newark, N. J.
Mooney Mooney
Newark Paper Box Co.
Newark Paper Box Co.
Partucker, R. I.
Shaw Paper Box Co.
Philadelphia, Pa.
Datz Mfg. Co.
Walter P. Miller Co., Inc.
Edwin J. Schoettle Co.
Geo. H. Snyder, Inc.

Philadelphia (continued)
Sprowles & Allen, Inc.
Portland, Me.
Casco Paper Box Co.
Providence, R. I.
Hope Paper Box Co.
Taylor Paper Box Co.
Taylor Paper Box Co.
Rockford, II.
Paul Bennett Paper Boxes, Inc.
Seattle, Wash,

Paul Bennett Paper Boxes, Inc. Seattle, Wash. Puget-Sound Paper Box Co. Union Paper Box Mfg. Co. Somerville, Mass. Consolidated Paper Box Co.

St. Louis, Mo.

Great Western Paper Box Co.
Moser Paper Box Co.
F. J. Schleicher Paper Box Co.
Service Paper Box Co.
Service Paper Box Co.
Lite, N. Y.
Utica Box Co., Inc.
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Ita L. Herry Company
Toronto, Canada
The Fielder Paper Box Co., Ltd.

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MARCH



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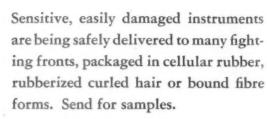
In cellular rubber!

AVAILABLE NOW – cellular rubber made to order for gaskets, seals and weatherstrips of various sizes. Capacity now available for industrial and war needs. Three types... SPONGEX*, with interconnecting cells. CELL-TITE* bard or CELL-TITE soft with individual cells. May be made resistant to gasoline, oil, corrosive vapors.

Suggested uses:

Package Cushioning
Container Gaskets
Dust Proofing
Space Filling
Vibration Dampening

Shock Absorption
Weatherstripping
Waterproof Channeling
Grommets and Seals
Instrument Parts



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Sponge Rubber Products Co.

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WORLD'S LARGEST MANUFACTURERS OF CELLULAR RUBBER PRODUCTS

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BARS - BILLETS - SHEETS - PLATES - SHAPES

Bars are also available Cold Drawn and Centerless Ground

Stainless Steel is a key material and is available for certain applications vital to today's needs. If your application qualifies, Jessop is ready to make prompt shipment in any of the standard analyses, or special analyses to meet particular problems.

There are numerous advantages to the stainless steel user in dealing with a moderately sized yet complete producing unit where material is melted and processed by one organization such as the Jessop Steel Company plant—more personal attention is given to individual orders; facilities, staff and schedules are prepared to meet severe specifications and special requirements; and the wide experience of the personnel assures the exacting user reliable and expert assistance in solving problems. We invite you to discuss your stainless steel problem with us.

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made as closely to size as humanly possible . . . with a tolerance of ±.002 in. in many shapes. That's one reason why these precision tools assure ACCURACY in your filing operations. Another reason is their uniform hardness . . . assured by special heat treating with automatic control and regulation to within ± 5 deg. Fahr. Furthermore, every "AMERICAN SWISS" file is rigidly in-spected for shape, cut, size and hardness, GUARANTEED to be perfect in every respect . . for "AMERICAN SWISS" has no "second quality" files for sale.

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Buy from our Distributor AMERICAN SWISS FILE & TOOL CO. Elizabeth 1, **New Jersey**



(Continued from page 278) of AA-2X or better during the 90-day period from January 16 to April 16, 1945.

Essential Oils and Floral Products-OWI-The United States Commercial Company will accept requests from importers for essential oils and floral products from France, pending restoration of private trade. No essential oils have been received from France since the United States entered war.

Changes in Aluminum Regulation-OPA-Three changes in the regulation governing maximum prices of aluminum scrap and secondary aluminum ingot were reported by OPA. The changes which became effective are: 1-Flat price for scrap suitable for use without remelting. 2-New method for computing conversion toll charges. 3-Baling and briquetting aluminum scrap.

1 1 1 RESTRICTIONS ON GLASSINE CLARIFIED

Restrictions governing the use of glassine greaseproof and vegetable parchment papers have been simplified and clarified by the issuance of an amendment to the Specialty Paper Conservation Order M-286, the War Production Board announces.

Glassine paper may now be used as a substitute for Holland cloth in the backing of retreading stocks for tires, tire reliners, patches and sandblast stencils, and as a wrapping on friction and rubber tape. Previously only vegetable parchment could be used as a substitute for Holland cloth in the manufacture of rubber products, officials of the WPB Paper Division said.

Glassine, greaseproof and vegetable parchment papers may now be used for wrapping tobacco and tobacco products packaged in folded flap type pouches as differentiated from the familiar paper

These types of specialty papers may not be used for wrapping or packaging popped corn, previously designated as popcorn, if used in laminated or duplex form containing more than 45 pounds of fiber per ream, it was pointed out.

SURPLUS PROPERTY BOARD TEMPORARY ORDER No. 2

Special Accounts for Refunds to Purchasers is the subject of Temporary Order No. 2 released by Helen Sullivan, Secretary of the Surplus Property Board, Washington, D. C., as of February 1st, which reads as follows:

"Section 30(c) of the Surplus Property Act of 1944 provides that, to the extent authorized by the Surplus Property Board, Government agencies may deposit in a special account with the Treasurer of the United States proceeds from disposition of property under the Act and may withdraw from that account appropriate re-

(Continued on page 284)

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TRUMBULLAID

to Purchasers of

ELECTRICAL CONTROL APPARATUS



TRUMBULLIST is specially designed for the use of Purchasing Agents and others who need ALL the essential buying information about Trumbull Products in compact ready-reference form. Normally issued twice a year.

Included in the Trumbull Line are Enclosed Safety Switches, Manual & Magnetic Starters, Combination Starters, Circuit Breakers, Panelboards, Switchboards, Control Cen-ters and Feeder Distribution Systems for Power in Industry . . . a line which has earned its prestige through 45 years of dependable service.

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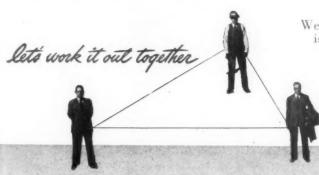
OTHER FACTORIES AT NORWOOD (CINN.) O. - SEATTLE - SAN FRANCISCO - LOS ANGELES



Highly significant among countless new materials developed for war requirements is Styraloy—trade-mark name for a remarkable group of plastics possessing properties intermediate between rubber-like materials and rigid thermoplastics.

"Working it out together" with the Armed Forces, Dow developed the first of this impressive new line—Styraloy 22—to provide a one-piece cable sheathing with a low power loss at high frequencies and possessing great durability and flexibility. These unique qualities—combined with others presented below in capsule form—point to its use in a broad range of products. As a result, unlike many war-born materials, Styraloy anticipates a peacetime career of great importance.

Now that Styraloy is available for commercial purposes, molders and manufacturers or designers will find Dow equally willing to cooperate with them in developing to the fullest extent the numerous applications indicated by the impressive list of Styraloy's properties. "Let's work it out together."



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We at Dow know from experience that success in plastics is not a one-man nor even a one-industry job. It calls for the combined skill and cooperation of manufacturer or designer plus fabricator plus raw materials producer.

Working together, this team saves time and money and puts plastics to work successfully.

Call us—we'll do our part.

PRESENT AND POTENTIAL USES: One-piece cable sheathing; handles for tools, household appliances, etc.; gaskets; bushings; coil forms; floor mats; scuff plates; many applications still to be ascertained.

PROPERTIES AND ADVANTAGES: High dielectric strength, low power loss over all frequencies. Power factor only .005 at 100-300 megacycles. Flexible and shock resistant from -90° F. to 212° F. Specific gravity less than 1 (floats in water). Water absorption only .2 to .5%. Resists heat, ozone, and most chemicals. Highly resistant to abrasion. Resists permanent indentation. Ideally suited to extrusion of complex cross sections and readily fabricated by other molding techniques. Easily machined.

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Model #66-02-Capacity ... 6 lbs.—Sensitivity ... 1/64 oz.—Ratio ... 1:1, 10:1 and 50:1— Shipping Weight, 60 lbs.

> Model #1743—Capacity ...200 lbs.—Ratio... 50:1 (and special tray for odd counts)—Beam... 5lbs.x1/2oz.—Shipping Weight...87 lbs.

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SCALE ENGINEERS IN ALL PRINCIPAL CITIES

(Continued from page 282)

funds to purchasers of such property.

"On January 26, 1945, the Procurement Division of the Treasury Department requested authority to establish such an account, not to exceed \$750,000, of which \$50,000 is to be allocated to each of its twelve regional offices within the continental United States and \$150,000 is to be held in reserve by the central office of the Division.

Order

"The Procurement Division of the Treasury Department is hereby authorized to deposit in a specific account with the Treasurer of the United States amounts from proceeds of dispositions of property under the Surplus Property Act of 1944 (Public Law 457—78th Congress) and to withdraw from such account the amounts necessary to make appropriate refunds to purchasers of such property, all to the extent set forth in the request made to the Board by the Procurement Division under date of January 26, 1945, and in accordance with Section 30(c) of the Act."

MUST FORECAST NEEDS THROUGH 1945

Because the 1945 munitions program will run over \$64,000,000,000 substantially above the 1944 level, and because increasing delays in deliveries of component parts to war manufacturers threaten to delay production of vital war items, J. A. Krug, Chairman of the War Production Board, outlined steps that are being taken by the procurement agencies to enable industry to meet the expanded program.

These steps include:

1. Procurement claimant agencies have instructed their contracting officers to place promptly contracts covering their forecasted needs, at least through 1945, wherever practicable.

2. Procurement agencies have also directed that, in the future, prime contracts shall contain clauses requiring

that:

a. Prime contractors place all necessary subcontracts and purchase orders promptly with their suppliers to assure receipt of needed materials and components in time for the scheduled deliveries called for in the prime contracts, and

b. Each contractor, in his subcontracts and purchase orders, include similar provisions to those in his contracts, requiring his suppliers, in turn, to place orders promptly with their re-

spective suppliers.

In general terms, Mr. Krug said, these steps are intended to make it possible for manufacturers and their subcontractors to "pull out the stops" and drive ahead for the year's production goals, fortified by a realistic picture of the year's requirements.

services is kept short, Mr. Krug explained, it is often impossible for prime If the "buying cycle" of the armed

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MAKERS OF THE FAMOUS TOUREK BALL JOINTS

SKILL ...

IN ENGINEERING AND PRODUCTION

WORKS FOR YOU AT

TOUREK!

It is our business to work for you—to produce screw machine products which fully meet your exact specifications. To do this, we have fully coordinated the vital factors of engineering "know-how". . . . modern equipment . . . and manufacturing experience!

Precision? Why, it has been a "must" at Tourek for twenty-five years.

Why not consult us now about your post-war requirements for screw machine products? All our skill in engineering and production is available to produce for you... in any quantity... in any alloy... and in any size up to 2 5/8".

J. J. TOUREK MFG. CO.

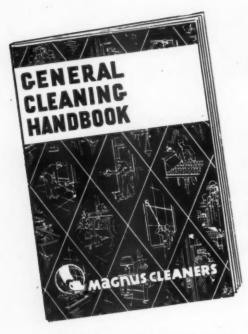
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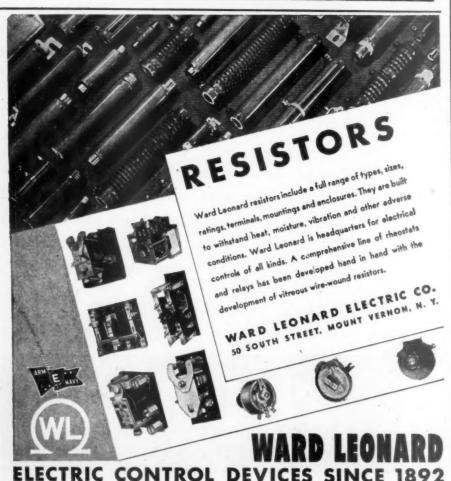


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Magnus

MAGNUS CHEMICAL COMPANY - 93 SOUTH AVENUE - GARWOOD, N. J.



(Continued from page 284)

contractors to place orders with their subcontractors-and for the subcontractors, in turn, to place orders with their own suppliers-early enough to make certain that materials and components are re-ceived on time. A manufacturer of component parts, for instance, may readily produce ahead of his contract if he feels reasonably sure that the items he is making will be called for in the near future; but if the future demand for the products becomes too much of a gamble, he is apt to draw on his inventories instead of keeping his production rates up, so that his actual production of parts will not keep pace with the required production of the finished items into which those parts are going.

Of necessity, material and component manufacturers must assume considerable risk, Mr. Krug said. This is inevitable from the very nature of the business and the rapid changes in the needs of the war. The Government should, however, place orders as far in advance as it can anticipate its firm needs and require its prime contractors to place the orders with their own subcontractors as quickly as possible. That is the effect of this

new policy.

During the final quarter of 1944, Mr. Krug continued, it developed that shortterm purchasing policies were requiring these secondary producers to buy materials and make goods in anticipation of forthcoming orders that required delivery in a period shorter than the productioncycle time of the product involved. Fears of contract adjustments and terminations, in turn, led to indefinite production levels. With actual contracts, requisitions or purchase orders in the hands of the component manufacturers, Mr. Krug said, and with these, in turn, supported by firm contracts held by the prime contractors, the secondary producers will be able to set firm production schedules to meet the needs of firm war programs.

The text of the clause that is to be inserted in all new prime contracts, which will be extended to all subcontracts and purchase orders on down the line, conforms substantially to the following:

"The contractor shall place all subconcontracts and purchase orders for materials and components (including "B" products as defined in the Controlled Materials Plan and other items normally taken direct from suppliers' stocks) required for the performance of this contract as promptly as possible and shall schedule deliveries thereof so as to enable it to adhere to, but not unreasonably anticipate, the schedule of deliveries set forth in Article -- Each such subcontract or purchase order shall expressly provide that the subcontractor or vendor shall place all its subcontracts and purchase orders as promptly as possible, that the subcontractor or vendor shall adhere to and shall not unreasonably anticipate the schedule of deliveries set forth therein, and that all subcontracts and purchase orders placed by its immediate and mediate subcontractors and vendors shall contain like provisions."

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FOR ECONOMY'S SAKE...

Made complete from a single sheet of steel. Four thicknesses of steel where hem overlaps corner give unusual strength and durability. As shown, 18 gauge. 11"x 22"x 6"..... 88c

Style "0" No. 425F12. (right) A stacking box to carry loads of 50 to 125 lbs. and withstand severe shop abuse. Each end and handle made in one piece and are riveted and welded in place for maximum strength. "V" shaped runners reduce friction. As shown, 18 gauge. 11 13/16" x 15½" x 4¾". \$1.40



Style "H" No. 421F14. (left)
Built for heavy loads and hard,
rough usage. Integral stacking feature in box ends provides positive
stacking lock and gives extra reinforcement. Shallow "V" shaped
runners support bottom of box. As
shown, 18 gauge. 12" x 18" x 6".
\$1.60





Style"RB"No. 445F11. Open hopper end permits quick easy removal of stock. As shown, 10"x 20"x 8". \$1.55

Bench Legs No. 2401-11.
Heavy steel sections.
Riveted and welded.
Maximum rigidity. Reversible front to rear.
As shown, 28" x 321/4",
\$2.95.



Machine Tool Cabinet No. 2345-11. Heavy steel bench top makes asturdy mounting for small grinders and vises. 36" wide, 24" deep, 37" high, including back stop. As shown \$17.05.

Shop Desk No. 2131-13. All-welded steel construction. Provides a smooth, firm working surface. As shown \$16.10.



Work Bench No. 100. Heavy steel top. Will not crack, gouge or splinter. Easily cleaned. As shown, length 60", \$14.25.





"RB" Shop Box No. 445-Fil. Open hopper end permits quick easy removal of stock. As shown, 10" x 20" x 8", \$1.55. All prices are F.O.B. Factory. When shipment is made from nearest assembly plant, prices will be quoted F.O.B. that plant.

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SHOP BOXES

• Lyon engineers...cooperating with plant executives in every type of industry... have designed a line of durable steel Shop Boxes that give the utmost in efficiency and safety to the important jobs of material handling, transportation and storage. Types shown and described above indicate sound design, durable construction and low first cost of Lyon Shop Boxes for every need.

For practical cooperation in developing a complete plan of efficient storage and material handling in current operations or conversion post-war plans, make use of Lyon's Storage and Shop Survey service. This service is yours without obligation. Write for complete particulars.

WHAT ABOUT POST-WAR?

Do your post-war products include sheet steel or aluminum? Check Lyon's manufacturing and designing facilities.

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MARCH



grene Manufacturing Compan **NEW JERSEY** AFFILIATED WITH C-O-TWO FIRE EQUIPMENT CO.

5. A manufacturer who has a "spot au-(Continued on page 290)

ACTIVITY UNDER PR 25 SHARPLY RESTRICTED

Although Priorities Regulation 25, the "spot authorization" order, has not been revoked, its use has been drastically limited by military needs, and activity under it must be sharply restricted until the present tight production situation loosens up, the War Production Board warns.

Summarizing the current situation in regard to PR-25, WPB pointed out:

1. The allotments and authorizations that have already been granted have not been canceled.

2. However, because of shortages, it is unlikely that mill orders for steel, copper in most forms and aluminum sheet placed under PR-25 will be filled during the first quarter and perhaps during the second.

3. Spot authorizations still can be approved to utilize any amount of idle and excess material provided the applicant has available facilities and labor. No new allotments will be made of copper wire mill or brass mill products. New allotments of steel will be limited to not more than 10 tons of carbon and two tons of alloy steel to "piece in" idle and excess materials. No limit has been placed yet on new allotments of aluminum.

4. Two additional severe limitations have been placed upon the functioning of PR-25, these are:

(a) The "four-power pact" issued December 1, 1944, and signed by the Army. Navy, War Manpower Commission and the War Production Board. Field representatives of these agencies in all areas of critical labor shortage, plus 44 in other areas centering about major manufacturing cities, were ordered by this document to grant no spot authorizations for 90 days except in unusual cases.

(b) Warehouses, now the best source of new material for "spot authorizations." have been limited in the amount of material they can deliver on "Z" allotments as follows:

STEEL-Distributors have been directed to deliver only 10 tons of carbon steel and two tons of alloy per customer each quarter, and customers are limited to a total of those amounts on "Z" allotments. Stainless steel deliveries have been stopped entirely. "Z" allotment orders may still be placed with mills, but it is extremely unlikely that they can be filled because regular Controlled Materials Plan orders come first. "Z" orders on mills are not limited in tonnage as are the allotments to be filled from warehouses.

COPPER-Purchases of brass mill products from warehouses under PR-25 authorizations are limited to 200 pounds per quarter. For copper wire, the quarterly limit that can be purchased from warehouses is 50 pounds.

ALUMINUM-No more than 1,000 pounds of aluminum sheet, strip and plate may be bought form warehouses per quarter. At the mill level, the supply situation is so tight it is unlikely that many deliveries will be made on

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Blessed Event



The Howell Protected Type Motor, shown, gives complete protection against dripping liquids, metal chips and other falling particles. Completely streamlined—utilizing non-breakable steel frame—malleable or steel base—cast iron end plates and cast iron, weatherproof terminal box are standard construction features. Special horizontal and vertical mountings are available.

Available in sizes 5 H.P. and smaller. Other sizes and types available up to 150 H.P.

The reception given a new Howell Motor in any plant comes right from the heart. For when a Howell of any size or type is delivered, you can be certain of two things:

- Every Howell Motor is built of the finest materials, is statically and dynamically balanced, and thoroughly insulated throughout —
- 2. Our steadfast policy of maintaining pre-war standards, with no compromise in quality, is being rigidly maintained

Yes, we are swamped with orders today. The delivery situation in the entire electric motor industry is serious. But we fully recognize our obligations, and we are putting forth our maximum efforts to see that Howell Motors are distributed among those users whose needs are most vital to the war effort.

HOWELL ELECTRIC MOTORS COMPANY

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Manufacturers of Quality Motors Since 1915

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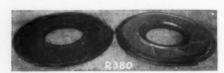
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Non-Magnetic Manganese Steel Is Also Shock and Abrasion Resistant

There are other non-magnetic metals, but where resistance to shock stresses and abrasion is essential, as well as non-magnetism, 10-14% manganese steel is often chosen. This steel is almost completely non-magnetic, having a permeability of



about 1.3 without surface preparation. Its price is lower than alloys with comparable properties unless extensive machining is required.

Austenitic manganese steel has a high resistance to breakage stresses, which has earned

its title of "The Toughest Steel Known." It workhardens on the surface under repeated blows, a phenomenon

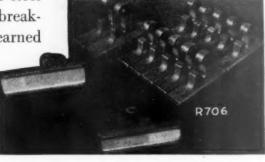
by which its abrasion resistance is increased in service.

The pictures show some of the non-magnetic uses to which manganese steel castings have been applied.

R-380. Bottom plate or coil

shield for a lifting magnet. It is subjected to heavy shocks when the magnet is dropped onto the pile to level out the material, and when the powerful current causes rising pieces to strike the plate with tremendous blows. Manganese steel cover plates are used on all makes of industrial lifting magnets.

R-706. Collector shoes for overhead traveling cranes are made of manganese steel not only for its extreme toughness and wear resistance, but be-



cause its non-magnetic property assures ready release from the rail.

Send for Bulletin 1144-NM, which pictures other non-magnetic applications for manganese steel.

Long lasting, wear resistant gears, sprockets, sheaves, wheels and rollers of manganese steel are described in Bulletin 842-WS.



POUNDRES AT CHICAGO HEIGHTS, ILL; NEW CASTLE, DEL; DENVER, COLO.; OAKLAND, CALF.; 105 ANGELES, CALF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

(Continued from page 288)

thorization is prohibited from ordering more than these amounts from warehouses in any quarter. These new restrictions are contained in Direction 6 to CMP Regulation 4, which was announced recently.

6. When a manufacturer needs more material than the amounts listed above, he may make an appeal to WPB in Washington as a special hardship case.

MANGANESE STEEL CASTINGS CEILING PRICES INCREASED

An increase of four per cent in the ceiling prices for all manganese steel castings was announced by the Office of Price Administration. The increase became effective February 12, 1945.

The increase is being authorized, OPA said, because the manganese steel castings industry at present is not earning an amount equal to its adjusted 1936-39 base period profits.

Under this circumstance, the present maximum prices are no longer considered fair and equitable by OPA, and an increase sufficient to restore profits to those of the 1936-39 pre-war period is mandatory to satisfy the minimum requirements of law.

Manganese castings are ferrous castings with a manganese content of from 10 to 16 per cent, usually not over 14 per cent. Extremely hard and wear resistant, manganese castings are used in grinding and crushing equipment, railway frogs, and switches, digging equipment, and other machinery requiring long-wearing surfaces. Items containing manganese castings in great demand by the armed forces include power shovels, earth-moving equipment and tank treads.

RULING ON CLASS B PPRODUCTS BEHIND SCHEDULE

The War Production Board ruled today that manufacturers who are behind schedule in making Class B products under Controlled Materials Plan procedures may not make up such deficiencies in any but the succeeding quarter for which such production has been authorized, and then only up to 10 per cent of the total production has been authorized.

This rule, set forth in an amendment to CMP Regulation No. 1, is adopted to prevent "jamming" of production into shorter periods than intended by WPB when making authorizations. Formerly, any production lag in Class B products could be made up in any succeeding quarter or quarters. This rule still applies to Class A products.

Class B products are those for which manufacturers make application to WPB for materials with which to carry on production. They include most civilian type products.

The amendment also permits the use of controlled materials that are not needed for the production schedule for which

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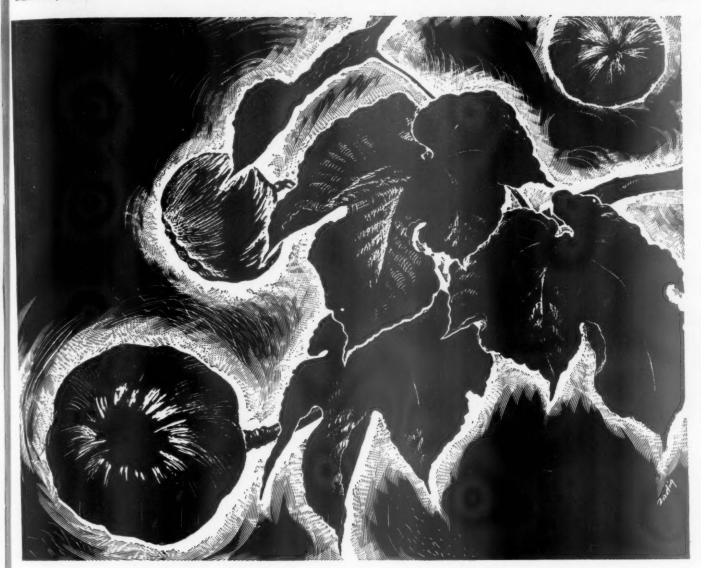
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PACIFIC BOOMERANG

This is the fruit of the Chinese tung tree—once vital source of China-wood oil—long since lost through war, but now being successfully replaced by domestic soft oils—thanks to the Pentalyn Resins.

Varnishes and enamels made with the Pentalyns and linseed, dehydrated castor, and segregated fish oils exhibit rapid drying and film hardness approaching that obtained with tung oil. Alkali and water resistance, outstanding in tung oil formulations, are retained to a high degree,

High cooking temperatures, necessary with soft drying oils, cannot impair the Pentalyns. Their pale color remains virtually unchanged—even during prolonged kettling at 300° C. and higher. Volatile loss is negligible.

Investigate the Pentalyns for furniture, equipment, transport, building-maintenance, and marine finishes. Please address your inquiry for technical data to: Synthetics Department,

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Get ALL of these advantages with the Pentalyns

- * No imported oils required
- ★ Clean and uniform quality
- * Shorter kettling cycles
- * Rapid through-dry, top-dry
- ★ Permanent whites, pastels
- ★ Excellent package stability
- * Resistance to water, alkali
- ★ Low first cost, product cost
- ★ Excellent adhesion, flexibility
- * High cooking temperatures



HERCULES PENTALYN* RESINS

N EXCLUSIVE VARNISH-MAKING DEVELOPMENT

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CASTINGS

- * Gray Iron
- * Semi-Steel
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Two modern foundries equipped for fast, efficient production can meet your casting requirements.

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Cleveland 13, Ohio
PHONE PROSpect 5040

(Continued from page 290)

they were originally acquired on any other production schedule in the same plant or operating unit if such schedule is authorized in terms of units or dollars. Formerly, the regulation did not permit such use.

In addition, the amended regulation specifically points out that materials obtained under a CMP allotment that are not needed for the purpose for which originally acquired may be used for any purpose for which the manufacturer is entitled to use a blanket allotment symbol (such as MRO), but in this instance, the amount of materials used must be charged against the permitted quota limiting the use of the blanket symbol.

Other changes have been made in the regulation, including certain modifications in required lead time for placement of steel orders and changes in minimum mill quantities for aluminum.

FIVE PERCENT CUT IN USE OF NEW FIBER SHIPPERS

A five per cent cut in the use of new fiber shipping containers for non-military purposes has been ordered by the War Production Board through amendment of Limitation Order L-317 (Fiber Shipping Containers; Manufacture and Use), WPB reports. The amendment limits the quarterly use of such containers to a number that will require only 95% of the total containerboard (by both weight and area) in the containers lawfully used by a packer in the corresponding quarter of 1944.

WPB announces that all grants of appeals under Order L-317 are expressly cancelled by the amendment.

"Reshippers" are to be counted as "new" containers and must be included in the packer's 1944 base usage. They are chargeable to the packer's 1945 quota. A "reshipper" is defined as any new container, made in whole or in part from solid or corrugated fiber, that contains empty inner containers (such as glass jars, cans, etc.) received by the packer, and which is then used by him for shipping inner containers packed by him with some product.

WPB officials said that full compliance with the revised L-317 is necessary if more drastic controls are to be avoided. Enforcement will be strict, they said.

CONTRACT SETTLEMENT AND SURPLUS DIVISION CREATED

Creation of a Contract Settlement and Surplus Materials Division has been announced by the United States Maritime Commission. This division is charged with the settlement of claims under terminated war contracts for supplies, shipbuilding and facilities, and with the redistribution of unrequired materials as well as the disposal of surplus property, except vessels.

Comprising this new division are the Settlement, Materials Utilization, and (Continued on page 294)

RAIJINY

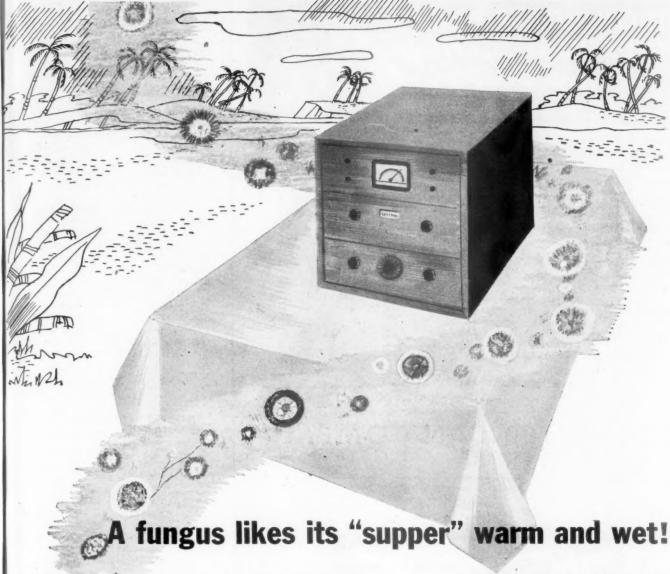
The NATION'S Goods pass through a Railway Expressman's hands!

The Railway Expressman is an integral part of the commercial and social life of the nation. That's one reason why, prior to the war, over 65% of all employes had been in the Express Service from 10 to 50 years. Few sought other work. The compensation, interest of the work—in short, being a Railway Expressman—offered a way of life satisfying to most.

Today, over 22,000 highly trained Expressmen are serving in the armed forces. The enormous increase in shipments, mostly of war goods, requires over 75,000 men and women, an increase of 50%. These new Express employes are performing their work well under trying conditions.

We look forward to the end of this war and the return of our veterans. We shall welcome them back. Old and new Expressmen will be ready to meet the shipping needs of an ever-expanding America.



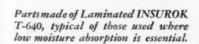


-but it won't get fat on INSUROK T-640!

Here is a modern precision plastic that's tailor-made for the humid, spore-laden atmosphere of the tropics. Under conditions where hungry, fast-growing fungi and mildew eat their way into equipment, destroying it in a matter of hours—INSUROK T-640 is proving its ability to outlast and out-perform ordinary materials ... with or without protective finishes.

The reason is simply that, so far as we know, there is no laminated

phenolic plastic which has the low moisture absorption of Laminated INSUROK, Grade T-640. In addition, it has uniform dielectric and mechanical characteristics, and can be fabricated. These and other features make INSUROK T-640 ideal for use with radar, communications receivers and transmitters, and a variety of other war or peacetime products. Write for complete information about INSUROK T-640. Or ask Richardson Plasticians to suggest a grade or type Laminated or Molded INSUROK best suited to your needs.



LRSUROL Precision Plastics

The RICHARDSON COMPANY

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CLEVELAND OFFICE: 326-7 PLYMOUTH BLDG., CLEVELAND 15, OHIO



derwriters Laboratory Specifications. Approved by Associated Factory Mutual Fire Insurance Companies.

Reinforced top extra strength to stand up under rough treatment. Gravity closing for safety-can't stay open.

Opening mechanism hugs can exterior no place for clothing to catch.

Man-size handles -- securely riveted, make moving and handling much easier.

Full apron body amply ventilated for air circulation. Firm foundation eliminates tipping. Constructed of galvanized steel.



ROCHESTER CAN COMPANY 80 GREENLEAF STREET ROCHESTER 9, N.Y.



(Continued from page 292)

Materials Disposal Sections in Washington. Maritime Settlement Offices are situated in Chicago, New Orleans, Oakland, Calif., and Philadelphia.

The director is generally charged with the performance of Maritime Commission functions under the provisions of the Contract Settlement Act of 1944, the Surplus Property Act of 1944 and the various regulations issued by the Office of Contract Settlement and the Surplus Property Board. He is authorized to make or approve binding settlements of war contractors' termination claims not in excess of \$10,000; to grant partial payments not in excess of \$10,000 on a single claim, or \$50,000 on all unsettled claims of any single prime contractor; and to recommend settlements or partial payments in greater amounts to the Settlement Review Board,

The commission has appointed Burton L. Hunter, formerly of Los Angeles and Honolulu, as director. For the last four years, Mr. Hunter, on the staff of the Bureau of the Budget, has been in charge of appropriation estimates for the Maritime Commission, the War Shipping Administration, and the Navy, State and

Commerce Departments.

CHANGES IN REGULATIONS ON ALUMINUM SCRAP AND INGOT

1 1

Three changes in the regulation governing maximum prices of aluminum scrap and secondary aluminum ingot, are reported by the Office of Price Administration. The changes involve flat price for scrap suitable for use without remelting, new method for computing conversion tool charges, and baling and briquetting aluminum scrap. Amendment No. 8 to Maximum Price Regulation 2, Aluminum Scrap and Secondary Aluminum Ingot.

"Public Relations" Begins in the Reception Room

(Continued from page 75)

The card is signed by Edwin A. Norris, Factory Manager, and Frank A. Jepson, Purchasing Agent.

In normal times, the salesman covering New Bedford would be traveling by car. But in these days the logical mode of transportation for the majority of business callers is by train from Boston, 56 miles away. So the welcome card is accompanied by a vest-pocket card showing the table of train schedules between the two cities. That's valuable, too, in timing the salesman's day. A full-year calendar on the reverse side is an additional inducement for him to keep and carry the card, and every reference is a reminder of his reception at Acushnet.

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CONCRETE RODS STRUCTURAL SHAPES LOVINSON STORIS CTEEL DEPONDED COMPANY. FLOOR PLATES CON DATE 12/4/44 PITTSBURGH PA SHEETS CHAIRT MANOFACTURING CO. Ship to 2208 DEARBORY ROAD, HADRISONVILLE, PA. CHARGE NO 4 8" WE Beaus, 31# 13 7/8" H.B. Rounds 9 37-718 % 5/16 Plates 61 36 X 116 GO. H.S. Sheets 2 17 x 3/16 Checker Plate CUSTOMER'S COFY Delivered by Our Truck

On quick and accurate steel supply;

Of all the words in prose or rhyme,

None are more vital than . . . ON TIME!



LEVINSON STEEL SALES CO.—

33 PRIDE STREET - PITTSBURGH, PA.

Gauntlet Lives on, and on!



Users of gauntlet-style industrial gloves can now prepare for some big savings: Jomac offers its new Safety GAUNTLET-CUFFS . . . and licks an ages-old problem of waste! The Gauntlet-Cuff is a separate piece, an extra-strong covering for the worker's forearm. The worker merely adds new gloves to the Safety Gauntlet-Cuffs and once

again has a gauntlet-type glove. Jomac Safety Gauntlet-Cuffs and Jomac Gloves . . . an unbeatable economy team!



SEE THEM WORK: Test these new Jomac Safety Gauntlet-Cuffs in your own plant. Check them for their easy workability, their economy. Write for details. C. WALKER JONES CO., Philadelphia 38, Penna.

Three Types of Jomac Gloves

REGULAR INDUSTRIAL TYPE

HEAT- AND FLAME-RESISTING

SAFETY GAUNTLET-CUFFS

The Purchasing Agent's Stake in Free Competition

(Continued from page 73)

not be snuffed out in order to protect existing agencies from new competition.

No Job for Timid Souls

The temptation may seem strong to steer clear of new-fangled ideas. They may seem disturbing in a world trying to find itself again. The Purchasing Agent, however, will make a mistake if he insulates himself by connecting up exclusively with old sources of supply, secure in his snug belief that any newcomer in the field is bound to be a "cris-eler." So-called surpluses after the war at competitive prices will disturb the sleep of many an agent if he lacks imagination. He will be afraid to buy them at bargain prices because of the danger of offending the old sources of supply, and he will be afraid not to buy because his competitor may be a more risky gambler. Of these timid souls, however, the inevitable question will be asked, "What are Purchasing Agents for, if not to go after new products, new prices, from new sources?"

If buying is to be grooved entirely into monopolistically controlled selling markets, without any occasion for the give and take of competition, the functioning of Purchasing Agents will become one of mere routine. It will not call for any unusual business judgment. If products and prices are completely standardized, the choices are reduced to what monopolists choose to offer, buying becomes pretty much a clerical operation.

There is only one answer, in my opinion, and that is to buy and sell day in and day out under maximum pressure and without regard for monopoly restrictions. Fortunately such a program will generate its own momentum. The more business, the more employment; the more employment, the more purchasing power. It is a magic spiral if it doesn't backfire and go into reverse. The reverse, of course, is born of a policy of scarcity and high prices - the monopoly formula. The farther away from this scarcity arithmetic we get, the surer we are of winning the peace after the war is won.

> BUY WAR BONDS

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<u>Pre</u>formed wire rope

CUTS PRODUCTION COSTS 3 WAYS

One reason is enough—but here are *three* reasons why <u>Pre</u>formed wire rope cuts production costs:

- 1. Preformed lasts longer; pays bigger dividends on wire rope dollars.
- Preformed rotates less. You don't have to repair or replace sheaves, drums and rope so often.
- 3. Preformed winds easily on drums. You encounter fewer delays. Your men and machines produce more per day, per month, per year.

Thousands of operators have standardized on <u>Preformed</u>—and use nothing else on tough wire rope jobs.



MARCH,



War Goods Pricing in 1945

(Continued from page 89)

would not be sound policy to protect a contractor against cost increases which are entirely within his control.

No Substitute for Renegotiation

Company Pricing was not developed as a substitute for renegotiation. As a matter of fact, the War Department has authority to exempt individual contracts from renegotiation, and has done so in some cases. Except for a very few companies, making relatively simple products, on which costs have long and clearly been established, neither we nor business have seen any practical method of exempting a company's whole business in advance from renegotiation. The Company Pricing Program, however, should result in many more clearances in statutory renegotiation than in the past. This is true for three reasons:

1. Companies which adopt and follow close pricing policies are less likely to turn up for statutory renegotiation with excessive profits.

2. The War Contracts Price Adjustment Board is definitely following a policy of giving more favorable consideration for a higher margin of profit to any company which has followed close pricing policies.

3. Because renegotiation representatives are a part of the Company Pricing agreement, all parties know in advance the end which was agreed upon as sound.

Two Kinds of Profit

There are two kinds of profit with which renegotiation must deal at the end of the year. One is the result of prices which were too high in the first place. The profit resulting from the difference between a high price and what the price should have been, is the kind of profit that most business men will agree should go back to the government.

The other kind of profit is the kind a business earns by increasing efficiency and cutting costs. This kind of operation saves manpower and materials urgently needed in other parts of the war production program. And the profit which stems from it is the kind of profit which the War Department and the War Contracts Price Adjustment Board want to see business earn and keep.

Our philosophy on purchasing and pricing is that price can be an (Continued on page 302)

"KNOW HOW"

IS THE SOLUTION TO YOUR PROBLEMS ON

SPECIAL WASHERS
SMALL STAMPINGS

Bring your troubles to us at Master Products. The experience gained in 25 years of solving Special Washer and Small Stamping problems enables us to serve you well.

OVER 10,000 SETS of TOOLS

at your disposal

If these won't give you what you want, our Tool and Die Department will make up special designs for you at reasonable cost. Just send us your blueprints or specifications.

Also a full line of Standard Washers in kegs or cartons.

U. S. S. Washers • S. A. E. Washers Riveting Burrs • Square Washers Expansion Plugs • Machinery Bushings Aircraft Washers • Discs

Light Steel Washers • Copper Washers
Brass Washers • Aluminum Washers
Stainless Steel Washers • Etc.

MASTER PRODUCTS

6400 PARK AVE. - CLEVELAND 5, OHIO

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Here are three special parts used in large quantities (two of them run into millions) by a large manufacturer of automotive equipment. They have both war and peacetime application.

They were originally made milled from bar. When sufficient production could not be obtained by that method, the problem was put up to *National*. We developed an upsetting procedure that met the need for *volume production* and also resulted in substantial *cost reductions*.

You may want to look into the possibilities of saving time and money on fasteners, for present needs or future. Or you may have a problem of fastener improvement on which our engineers can help you as they have many other manufacturers.

Chances are you'll be surprised at what can be done.



THE NATIONAL SCREW & MFG. CO., CLEVELAND 4, O.

MARC



Glass gives you more than a protective surface... far more!

That glass desk top you've learned to take for granted illustrates a point of importance to designers of new products, equipment or processes.

It embodies many characteristics of glass, in combination, to do a job no other product could do so well.

It protects the finish of the desk top, of course. But also, it provides a surface that is hard, abrasion-resistant, smooth, beautiful. Its transparency permits observation of material placed beneath it—while that material is protected from dust and moisture. The glass top has a permanent finish—one that ink or burning cigarettes won't harm. And it is quickly cleaned time and time again without injury to its lustrous finish.

These are a few of the many characteristics of glass that combine to make it an ideal surface for many of tomorrow's products or equipment. We'd like an opportunity to discuss with you the practicability of any uses of glass which may occur to you. Libbey Owens Ford Glass Company, 6135 Nicholas Building, Toledo 3, Ohio.

Here's the combination that makes GLASS one of the world's most versatile materials:

CHEMICALLY, the most stable of all materials, except the noble metals. Won't rot, oxidize or disintegrate, plus—

DIMENSIONALLY STABLE. Coefficient of expansion extremely low. Keeps its shape, plus—

SURFACE, among the world's hardest and smoothest. Nonporous, won't absorb odors or moisture. More acid-resisting than any structural material. Unusual resistance to abrasion. Weathering qualities unequaled, plus—

STRONG, tempered glass is stronger than some metals. A square foot, ½" thick withstands pressure of 60 lbs. per sq. in. and thermal shock of 400° F. Will not burn—

ELECTRICAL INSULATOR of outstanding strength.

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LIBBEY · OWENS · FORD

a Great Name in GLASS

Destructible? Wood — Metal — Plastics — Glass. No material is indestructible. However, barring unforeseen conditions, no material will fail on a job in which it has been properly specified and engineered. When our application engineers say "Yes", you can be sure about glass.

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A NEW
CATALOGUE
THAT WILL HELP
YOUR PRODUCT
PLANNING



The Standard Products Co., manufacturers of thermo-plastics, thermo-setting plastics, molded mechanical rubber goods, metal stampings, glass run window channel, munitions and automobile hardware, have compiled a comprehensive brochure of their diversified manufacturing.

The new Standard Products Co. Catalogue is profusely illustrated and offers many ideas to manufacturers in the use of plastics, steel stampings, and molded rubber.



Standard Products Co., 505 Boulevard Building,

East Grand Boulevard, Detroit 2, Michigan.

Please forward me a copy of your latest catalogue.

Name

Title

Company

Street

City

Standard Products Co., 505 Boulevard Building,

Michigan.

Please forward me a copy of your latest catalogue.

THE STANDARD PRODUCTS COMPANY

General Offices and Research Laboratory

505 Boulevard Bldg.

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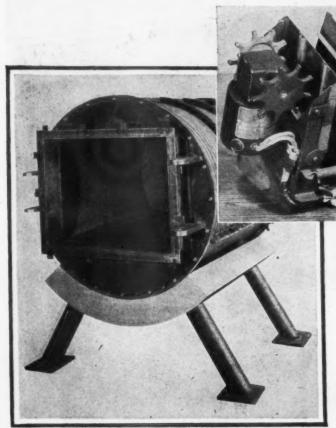
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Woodward Ave. at E. Grand Blvd.

Detroit 2, Mich.

MARCH,



mmunition Booster to feed belted ammunition to machine guns on Martin airguns on Martin air-planes. Built of stainless steel by Brandt of Baltimore.

3,800 lb. Electro-Processing Oven, fabricated by Brandt for a cork board plant.

These Fabrication Facilities May Fit Your Postwar Plans

If your postwar production will include some fabrication to be done by a reliable, experienced, metal-working organization . . . Brandt of Baltimore can fill a definite need for you.

For over 50 years Brandt has fabricated metal for scores of industrial uses. Present products range from small, formed units of a few ounces to huge fabricated assemblies weighing 30 tons. The Brandt 81/2 acre plant has complete, modern equipment for shearing, rolling, forming, welding. Machine capacities range from the lightest gauge up to and including 11/4" mild steel or 34" armor plate. All metals, ferrous, non-ferrous and alloy, can be completely fabricated to your specifications.

And if you've hit a snag on your postwar product, our designers and engineers will welcome the opportunity to assist in planning the details and specifications. Naturally, all plans will be held in strict confidence. So if there are fabrication or design problems in your postwar plans, we invite you to discuss them with

ANDT of Baltimore

Charles T. Brandt, Inc., 1708 Ridgely Street Baltimore 30, Maryland THAT HE WAS A

BRANDT of Baltimore · Craftsmen in Metal Since 1890

War Goods Pricing in 1945

(Continued from page 298)

important factor in increasing production. Even if excessive profits are not accumulated, a price that is too high eliminates the normal pressure on costs. A company which faces the possibilities of a low profit or a loss, takes a different point of view from that of a company with plenty of "cushion" in its prices. The company with the low price has to "scratch gravel" to reduce its costs in order to make a profit. The company with the low price has to "scratch gravel" to reduce its costs in order to make a profit. These cost reductions mean efficient operations, and these efficient operations mean a greater total of war This is a common production. meeting ground for industry and the Army.

Promoting Industrial Efficiency

A far-sighted company is more concerned about its postwar position than about war profits. A company that comes out of the war with money in the bank and inefficiency in the plant will not be in a good competitive position. Many executives have told us that attitudes about cost and efficiency set the character of an organization, and that these attitudes take a long time to improve in a lax organization. A company which permits itself to become careless in its attention to costs will not be able to reverse this atitude by pressing a button when the armistice is signed. Once lost, low cost operation is difficult to recover especially difficult if the company's competitors are ready to move into its market with tough organizations.

We sincerely believe that Company Pricing can help business in preparing for its postwar problems as well as in setting fair and reasonable prices now.

One of the comments on the program expressed the essence of our objectives in a sentence. Babson's Report for January 1st said: "The new repricing program . . . will be the nearest thing to free markets yet reached by war contractors during the war."

And that is really the nub of the matter. What we are seeking with business is the same kind of pricing for war goods which would prevail if the normal forces of American competition were working today.

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Staples specification on hardness of body for reamers established a new high standard for the industry.

Other Staples quality features include more accurate diameters; diamond lapped finish on carbide; and finish grinding of all flutes. And Staples makes the only expansion reamer which produces accurate holes after expansion without regrinding. Important savings result.

Cut your costs and speed your production by using Staples superior cutting tools. Standard tools are available from slock. Ask us also about Staples special tools, designed to meet your special needs.

Staples Tool & Engineering Company Cincinnati 25

taples CARBOLOY-TIPPED CIRCULAR CUTTING TOOLS

REAMERS . CORE DRILLS . SPOT FACERS . COUNTERBORES . END MILLS . SHELL END MILLS ALSO A COMPLETE LINE OF CIRCULAR SPECIAL TOOLS

A. N. Selson; Buffalo, R. C. Neal; Charleston, Cameron & Barkley (Branches, Jacksonville, Miami, Tampa); Chicago, Screw Machine Supply; Cleveland, Strong, Carlisle Hammond; Dallas, Machinery Sales & Supply; Denver, Mine & Smelter Supply; Detroit, Sterling Supply; El Paso, El Paso Saw & Belting Supply; Erie, Neal & o; Houston, G. F. Cotter Supply; Knoxville, W. S. Murrian; Memphis, J. E. Dilworth; Minneapolis, John C. Eide; Muskegon, Muskegon Hdwe. & Supply; Newark, Jeneral Carbides; New Orleans, Murray-Baker-Frederic; Norfolk, Empire Machinery & Supply; Omaha, Fuchs Machinery & Supply; Syracuse, Syracuse Supply; Joledo, Mill & Factory Supply; Tulsa, Marshall Supply & Equipment; Waterbury, White Supply; Waterville, Harold W. Kimball.



MARCI



CENTERED DRIVING

means faster fastening

A Corbin-Phillips Recessed Head Screw holds the end of the driver firmly centered in a four-point grip of steel. This gives you non-slip operation, permitting faster fastening, with each screw driven home stronger, deeper, firmer . . . making for greater security, better production, lower cost.

Whether you drive your screws by hand or power, use Corbin-Phillips Centered Driving for better profits!



FOB Law

(Continued from page 96)

mony to determine the law. Generally, "intentions" of the parties is

a controlling element.

For illustration, in Standard Oil Company of California v. Johnson, 147 Pac. (2d) 577, the higher court held that whether delivery of merchandise to a carrier constitutes legal delivery to the buyer depends upon the intention of the parties.

Also, see Star Transfer Line v. General Exporting Company, 13 N. W. (2d) 217. In this case it was shown that a shipment of valuable merchandise was made to the order of the shipper "notify General Exporting Company." Later legal controversy arose over legal title to the merchandise. This court held:

"The law seems well established that a bill of lading which provides for delivery to the order of the shipper indicates an intention to reserve title in the shipper."

Also, see Schlitz Brewing Company, 129 Iowa 172, page 182, 105 N.W. 438, page 442, 2 L.R.A., N.S., 1078, where the court stated:

"The fact of making the bill of lading deliverable to the order of the vendor is, when not rebutted by evidence to the contrary, almost decisive to show his intention to reserve (the) jus disponendi and to prevent the property from passing to the vendee."

On the other hand, modern courts have adopted a legal rule that although a bill of lading is to order of the shipper testimony may be introduced proving that in so doing the shipper acted as agent for the vendee or purchaser, and did not intend to retain control of the merchandise. While the bill of lading is an important item of proof, it is not necessarily conclusive of the question. As between the consignor and consignee, the bill of lading cannot be regarded as a contract in writing, but merely as an admission or declaration on the part of the consignor as to his purpose, at the time, in making the shipment. However, such admission is subject to be rebutted by other circumstances connected with the transaction.



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Employees appreciate this

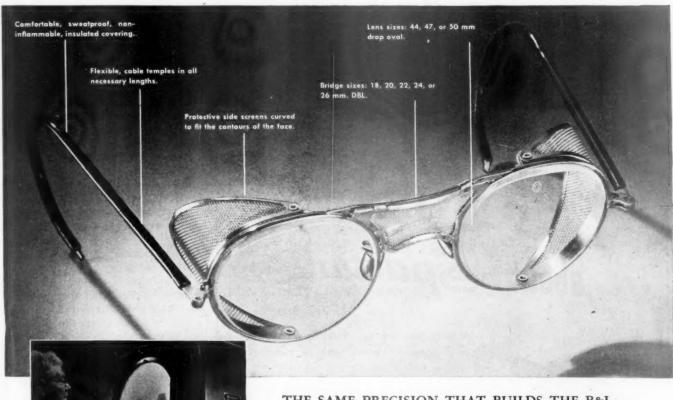


GOGGLE COMFORT

THE EYE SAFETY PROGRAM you develop becomes effective only when workers wear their goggles on the job. Obviously, an early step in developing such a program should be the selection of goggles that are comfortable and easy to wear.

Bausch & Lomb was among the first to recognize the need for comfortable safety eyewear. With a long background of experience in the manufacture of regular spectacles, Bausch & Lomb developed a complete line of safety eyewear in sizes and shapes to fit all faces . . . comfortably.

Complete selections of metal spectacletype or cup-type goggles are available for every job need, fitted with Bausch & Lomb Safety Lenses, plano or prescription ground. B&L Safety Lenses (either single vision or bifocal), professionally prescribed to the visual requirements of the job, can be worn with comfort and convenience comparable to that of workers' regular glasses. Write for complete details. Bausch & Lomb Optical Company, Rochester 2, N.Y.



THE SAME PRECISION THAT BUILDS THE B&L CONTOUR MEASURING PROJECTOR

Bausch & Lomb Safety Eyewear is built to the same standards of quality and preci-sion as are the many precision optical instruments for military, industrial, scientific, and educational use. Among these many Bausch & Lomb instruments is the

Contour Measuring Projector, used by industry for accurate measurement and comparison of products and parts. Through its use, exact measurements to .0001" or one second of arc are possible, even on irregularly shaped pieces.



Safety Eyewear

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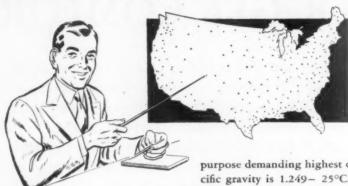
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MARC

QUICKLY AVAILABLE AT A STOCK POINT NEAR YOU!



Armour's 332 stock points mean fast, dependable service for your present and future glycerine needs.

CHEMICALLY PURE or U. S. P. . . . A high grade, water-white glycerine meeting the requirements of the United States Pharmacopoeia. Suitable for use in foods, pharmaceuticals, cosmetics or for any

purpose demanding highest quality. Specific gravity is 1.249- 25°C./25°C.

HIGH GRAVITY ... A pale yellow glycerine for industrial purposes with a specific gravity of 1.262-15.5°C./15.5°C.

DYNAMITE ... A yellow glycerine made especially for the explosives trade. It has a specific gravity of 1.262-15.5°C./15.5°C.

YELLOW DISTILLED . . . A yellow glycerine for industrial purposes with a specific gravity of 1.259- 15.5°C./15.5°C.

ARMOUR AND COMPANY 1355 WEST 31ST STREET

about Spartan



"Spartans Cut Cutting Costs" A complete line of Hack Saws and Band Saws for every type of metal cutting.

Manufactured and heat treated by our special Spartanized Methods that assure uniformity at all times.

A "Must" in hundreds of plants who have found their service solves their problem.

Carried by Distributors everywhere who can give service from their stock.

SPARTAN SAW WORKS, Inc., Springfield, Mass., U. S. A.

A Short Cut For Stock Records

(Continued from page 78)

of future records; therefore these cards are required to be refurnished only once every four years.

The question might reasonably be asked as to the plants' reaction to the use of this special form. We can say that our early experience was that it took them no longer to make it out than the old handwritten form. We believe we can safely say that after some experience with it, this form actually saves them some time and that none of the plants would want to return to the old handwritten method

Purchasing Is an All Around Job

(Continued from page 97)

technique, which will not be considered something superfluous when the war is over.

It is clearly evident that Government will continue to have a large role in production controls. It will be a potent factor in reconversion. in the disposition of surplus materials and products, in pricing, distribution and in industrial spheres generally, which affect the whole The Purchasing Agent. economy. if he has done his job well, will have acquired a practical knowledge of Governmental controls of all sorts, and their effects on his company's products. He will have ferretted out sources of supply hitherto untapped.

He will know sales method and sales promotion because he is constantly exposed to them himself.

He will know markets because he is being solicited daily as a potential market himself.

He will know production methods since he has had to fit alien materials into available production facilities.

He will recognize inefficiencies and ineptitudes in sales methods since he is most frequently the

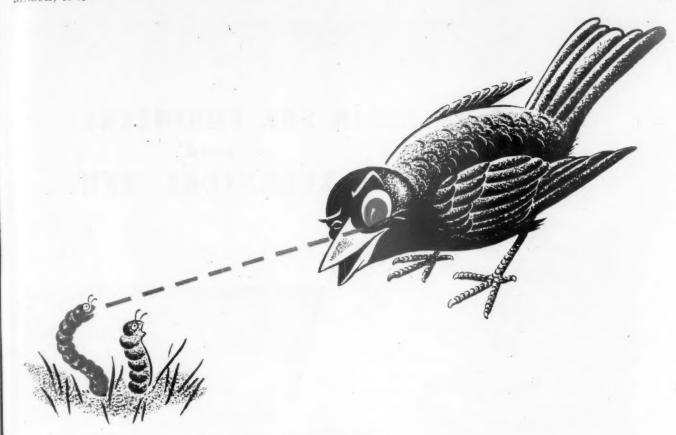
These represent the challenge.

Scope of Purchasing Service

Here are some of the opportunities.

Because his membership in the National Association of Purchasing Agents gives him the means of tapping the enormous reservoir of purchasing knowledge and experience. represented in the aggregate membership, his interests are less parochial than those of his boss:

(Continued on page 310)



EYE APPEAL

The power of attraction — through eye appeal — means consumer attention and positive product identification.

Colorful Palm Brothers Decals command such attention — give you the product identification you desire.

Regardless of surface, Palm Brothers Decals are easily applied. Magnetic in color, economical in price, remarkable in durability, they are your marks of distinction . . . exclusively yours.

Palm Brothers Decals spell the difference between dynamic product identification and mediocrity.



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Colobeitor One

LOBEIRON Seamless Pressure Tubing J (99.5% pure iron) is manufactured by piercing solid rounds and rolling them into tubes. It is pressure tubing that is easily formed or welded and offers unusual qualities of corrosion resist-

Boiler tubes of Globeiron are easily rolled in and beaded; condenser tubes may be expanded, flared, or flanged readily because of the ductility and

ance - ductility - toughness.

toughness of Globeiron.

Bulletin 113 gives the complete facts on Globerion advantages - write for your copy today.

- * STAINLESS TUBES
- * BOILER TUBES
- GLOBEIRON TUBING



CONDENSER AND HEAT EXCHANGER TUBES

5015

GLOBE STEEL TUBES CO., Milwankee 4, Wis., U.S.A.



• When you buy springs, remember this. Here at Accurate, we've crowded 12 ordinary years' experience into the last four. We've produced millions of springs of various kinds, sizes, shapes and materials. In doing this . . . we've had to use our fullest ingenuity . . . searching for newer, faster ways of doing everyday jobs . . . developing special machines and unique methods of turning out unusual springs and wireforms . . . often helping our customers with ideas that have meant a lot to them . . . in time . . . in money.

In your postwar planning . . . remember that Accurate's wealth of spring experience is . . . at your service.

Accurate Summings

Send for your copy of the new Accurate Spring Hand² book. It's full of data and formulae which you will find useful. No obligation, of course.

SPRINGS WIREFORMS STAMPINGS

ACCURATE SPRING MANUFACTURING CO., 3825 W. Lake St., Chicago 24, Illinois



Chicago Wheel takes pride in providing you with exactly the wheel you need, for exactly the job you have, to give you exactly the finish you want!

There's half a century of experience behind this, fifty years of specializing on grinding wheels — grinding wheels with hundreds of varieties in shape, size, abrasive and bond formulas, engineered for the right tool speed and work pressure.

Come to Headquarters — Our long experience and testing laboratory are at your service, free for the asking. Tell us about your tough grinding or polishing job. Our abrasive engineers will report promptly, give you their tested solution.

TRY ONE FREE — A Chicago Mounted Wheel or an FV Bond Grinding Wheel sent promptly on request. Tell us size preferred and what you have to grind.

Send for Illustrated Catalog

CHICAGO WHEEL & MFG. CO.

1101 W. Monroe St., Dept. PG, Chicago 7, III.



		Pg-3
Send Catalog. In- terested in	Name	1
☐ Mounted Wheels		
☐ Grinding Wheels	Address	
Send test wheel		
Size		

Purchasing Is an All Around Job

(Continued from page 306)

Therefore, he can make a genuine contribution to management.

Because he is constantly being offered materials and products incident to his company's work, he is equipped with a diversified knowledge of materials:

Therefore, he can make a genuine contribution to the Production Man-

ager.

Because he is the main object of concentrated sales effort, he can competently appraise sales promotion methods:

Therefore, he can make a genuine contribution to the Sales Manager.

Because he must work with inventory controls and inventory balances, cyclical material purchasing and efficient systems for keeping records:

Therefore, he can make a genuine contribution to the Accounting or Comptroller's Office.

Because he knows competing lines, their sales appeal, the effect of all forms of advertising and media on himself in his daily work:

Therefore, he can make a genuine contribution to the Advertising Department

Because he frequently inspects the materials he buys while it is actually being produced, he knows efficient shop management:

Therefore, he can make a genuine contribution to shop foremen and

production engineers.

The list could be extended but the opportunities for the Purchasing Agent are limited only by his capacity for work, his assimilative power and his willingness to accept his responsibilities which management is now anxious to confer upon him.

Purchasing is now being recognized as one of the most important facets of modern business. It is rapidly being promoted to professional dignity.

Therein lies the challenge and the opportunity.

The responsibilities of the Purchasing Agent are collateral with his responsibilities to his own profession. He will be called upon to provide management with solutions to innumerable problems adjutant to the successful conduct of modern business. Only by continuous education, alert and intelligent assimilation of purchasing knowledge, and vigorous application of such knowledge can the challenge be met and the opportunity brought to fruition.

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What If They Had to Stop 240 Times a Day?

The cry was for ammunition. Speed! Speed! It must come in a mighty stream, for without it American lives would be lost in an unequal struggle.

So, when Bauer & Black engineers were summoned to a great shell-loading plant, they helped reduce work stoppages from 240 per 24-hr. day to only 58, which meant the saving of lives.

Yet all they did was to perfect a special, longer roll of tape for the machines that wrapped the shells, and which had been shutting down every 6 minutes for "reloading." Then, because there was no time at all to make larger shipping containers, they used powder drums as substitutes.

RESEARCH - EXPERIENCE - "KNOW-HOW"

Simple things, born of research...laboratory testing...experience...prove big things, when translated into the needs of war and industry. Solution of the simplest looking problem may bring great savings when solved right.

Bauer & Black technicians have solved many similar problems. They have saved many firms up to 45% in tape costs... reduced operating costs... increased plant efficiency. Can you afford not to look to the best technical knowledge, and tape experience, in every application of Industrial Tape?



BAUER& BLACK Industrial Tape

WRITE DEPT. 23 without the slightest obligation, and say when our Sales Engineers can call and discuss your *specific* problems. You have nothing to lose. You may gain much.



A product of

BAUER & BLACK

Division of The Kendall Company

2500 SOUTH DEARBORN ST., CHICAGO 16, ILLINOIS

RESEARCH TO SPEED AND IMPROVE METHODS . . . PRODUCTION SHORT CUTS TO REDUCE COSTS

* * *

MARCI

Evaning Balls



WITH STAMINA PLUS

- Uninterrupted performance is the norm established by Design and Production Engineers . . .
- Each part, each unit must have stamina
 ... to withstand the gruelling load ...
 to deliver precision-planned performance ...
- Tough specifications, these but daily met by ABBOTT BEARING BALLS. They have the "built-in" stamina to carry the load as planned.

FOR UNINTERRUPTED PERFORMANCE

Specify "ABBOTT"

ABBOTT Bearing BALLS
THE ABBOTT BALL COMPANY BALLS

Put Your Inventory to Work

(Continued from page 100)

as well as the physical sense—to prevent large but necessary inventory investments from depleting equally necessary working capital or funds for expansion. One of the more interesting of these methods is described in a booklet on "Field Warehousing" issued by the St. Louis Terminal Warehouse Company.

Field warehousing is a method of facilitating inventory loans. The technique is relatively new, but it is based on one of the very oldest types of loans, which were secured by the pledge of stored commodities. The unique feature of the modern plan is that the traditional procedure has been reversed: instead of delivering the goods to a public warehouse, the warehouse comes to the goods.

Here is the way it works. A legal bonded warehouse is established in leased space on the premises of the owner of the inventories. It is put in charge of a bonded, full-time warehouse employee or custodian who is empowered to receive inventories into the leased space, issue warehouse receipts to be used as collateral for loans, and effect releases of the inventories when payments on the loan are made to the lending agent.

The advantages are obvious. No interruption to operations need be incurred. The goods are readily available, in one place; they are subject to accurate inventory control that can be coordinated with the owner's own materials records; he can continue to take cash and quantity discounts and strengthen his general credit standing. No transportation costs are involved in putting the inventory in a collateral position on the borrower's premises. Loans may be negotiated on all or any part of an inventory with full legal and financial protection to both parties. The custodian may be, and frequently is, one of the borrower's former employees, who is familiar with the inventory. The particular arrangement can be adapted specifically to the user's requirements. Costs, too, fluctuate in exact ratio to the amount of the loan. Banks can make loans at lower interest rates when secured by warehouse

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The system has been endorsed as flexible, economical and efficient by

(Continued on page 314)

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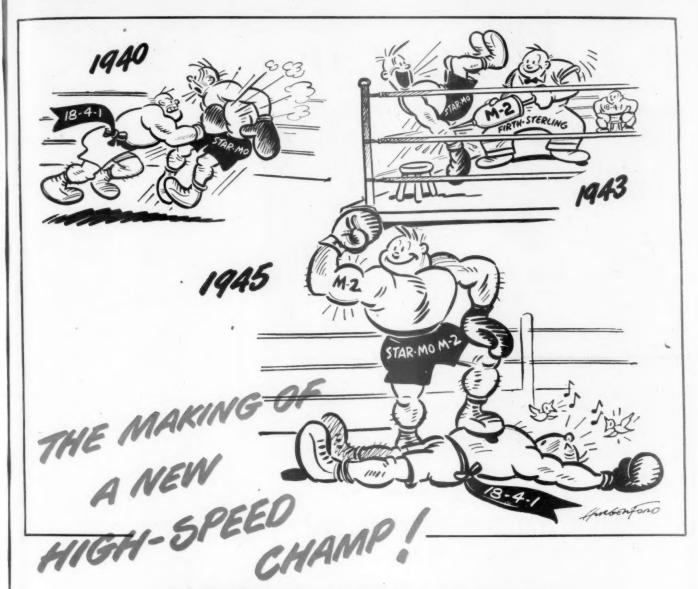
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STAR-MO M-2

Improved

TUNGSTEN-"MOLY" HIGH-SPEED STEEL

Ever since the new "M-2" analysis was adopted for tungstenmolybdenum high-speed steel, more and more manufacturers in the automotive and tool-making fields are recognizing with approval and satisfaction this new Firth-Sterling champion, STAR-MO M-2.

They have seen this new steel in action. They find it excels 18-4-1 in their plants. They are supporting it with enthusiasm because it is giving satisfactory performance continually, and adding new accomplishments to its record. Why not give STAR-MO M-2 a try-out in your shop?

Firsh-Sterling



STAR-MO M-2 is Be

Outcuts and outlasts 18-4-1 high-speed steel on most applications.

STAR-MO M-2 Costo Lead

Base price is 14% less than 18-4-1 steels, and weight is approximately 7% less per foot. Let us quote.

STAR-MO M-2 is Easy to Handle

Call in a Firth-Sterling Representative to discuss applications, heat-treating methods and practical advantages.

MARCH,

Put Your Inventory to Work

(Continued from page 312)

the Bank Management Commission of the American Bankers Association. It has been adapted to several hundred different commoditiesboth raw and finished products and, in some cases, to materials in process. Among the examples cited in this booklet are such varied inventories as wholesale liquor stocks, oil refinery inventory, dried eggs. wheat in elevators, reserve inventory of leather in bales, battery charging units, paper on skids in a large printing house, coal stokers, sheet steel, building supplies (including slate, tile, plaster, celotex. lath, roofing paper, and pitch), coal and coke, chemicals, and the like.

So when turnover slackens, there 'is still an opportunity to keep inventory at work. It may not be possible to turn your purchased stockpile twenty-four times a year, and it may not be desirable to do so. though it will probably be wise to raise your sights and your standards in respect to this factor of supply and materials cost. But whenever the stockpile starts to loaf on the job, beyond that prudent margin which represents good production insurance, it's time to do something about it-and promptly. Put your inventory to work.

Shelf Goods Are War Goods

(Continued from page 104)

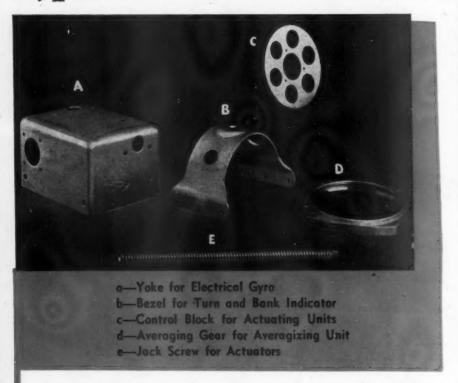
els which will assure scheduled deliveries of the military end products.

"You are directed to bring the policy outlined in this memorandum to the attention of the affected industries and companies with which you deal and of the appropriate industry

advisory committees.

"Representatives of the War Production Board should make it clear that this is a statement of the procurement policies of the Army and Navy and other procurement agencies and is in no sense a request by the War Production Board to anyone to furnish materials or to proceed to produce. Under this policy, it is up to suppliers themselves to obtain proper contractual protection from their customers, and they should seek the assistance of the procurement agencies whenever necessary in order to accomplish this."

Typical LEA Finished Parts



... all Manufactured by the UNITED STATES TIME CORPORATION

Waterbury, Connecticut

Here we have stampings, die casting and a steel shafted, copper, gear. All had to be finished. Each had to be finished differently. On some, burrs had to be removed.

No better example of the versatility of LEA Finishing Methods and of the effectiveness of LEA Finishing Compositions can be found than in these five items made by The United States Time Corporation.

If you have a finishing problem, a burring problem, write us in detail. It will be given our immediate attention.



THE LEA MANUFACTURING CO.

Waterbury 86, Conn.

Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods and Compositions

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RELIEVED SHANKS PREVENT STRAIN **SEATING!**

BY ALL MEANS-BUY BONDS!

TWIN-FAST's Relieved Shank Diameter Prevents Stresses which Weaken Seating!

All too frequently, the shank diameter of the ordinary wood screw (as great or greater than the thread diameter) has a wedge action—"prying" the wood fibre away from close contact with the screw threads. Sometimes fissures and even splitting of the wood result. The relieved shank diameter of the Twin-Fast Screw was designed to prevent these mishaps which might mean costly loss of time and materials. • Test the superiority of Twin-Fast Screws in your own plant. Samples sent on request.

Other Twin-Fast Features

Twin, parallel threads provide twice the thread pitch of ordinary screws. Driving time and costs are cut in half!

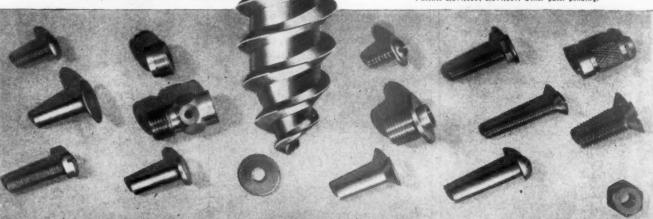
Single, sharp, centered point where twin threads terminate assures quick starting, self-centering, balanced driving.

Cylindrical construction (not tapered) increases thread area for tighter seating, greater holding power. Often, fewer and flat or oval heads-standshorter screws may be used.

Twin-Fast Screws came in steel or brass with round. ard sizes and thread count.

For Faster Production - Sounder Construction -

TWIN THREAD WOOD SCREWS



The Blake & Johnson Company makes many thousands of different types of fastening devices in all standard metals.

THE BLAKE & JOHNSON COMPANY WATERVILLE, CONNECTICUT

MARCI



RIRGR WORK **GLOVES**

These strong, protective work gloves are the. product of one of America's largest textile mills. They are Riegel-controlled - in one plant - from raw cotton to finished glove. This single close supervision of every detail results in unexcelled quality durability - economy.

> "The Right Glove For Every Job"



RIEGEL TEXTILE CORPORATION

342 Madison Ave., New York 17, 14. Y.

Louisiana Market Study

(Continued from page 81)

this are represented in a relatively limited list of twenty-five items, on which the annual out-of-state purchases range from one hundred thousand to more than half a million dollars. Manufacturers and distributors should find this list worthy of special consideration.

The first twenty-five items, in order of volume, are as follows:

Nails and wire products Cotton goods, textiles Miscellaneous lumber Asphalt Sheet steel Pipe fittings Steel pipe Machinery Starches Burlap Valves Wire cable Hand tools Linseed oil Tractors Miscellaneous pipe

Meters Granular slate Fertilizer

Electric refrigerators and parts Cloth tape

Cast iron castings and flanges Paper bags

Paint

Forgings A complete summary of the items reported is shown in the accompanying table.

Profit in Priorities

(Continued from page 102)

shown in various forecasts and other business letters. Perhaps this supposition may never materialize, but there can be no better motto for business than "Be Prepared." It is always better to know and pursue a definite course based on knowledge than to grope blindly in a twilight of doubt and uncertainty.

Importance of Records

Adequate records—not too much and not too little-are the solution to success. The government through its use of statistical forms, has forced upon the business structure, a set of records where no records or poor systems existed prior to the war. The enforced establishment of these

(Continued on page 318)



Protective Packaging Methods and Materials in universal use today.

Waterproof and corrosion preventive wrapping and caselining papers including crinkled:

> INDUWRAP BROWNSKIN GRIZZLYBEAR RIPPLEKRAFT COILWRAP



Easy Acting ... Up And Down

Helmet-Goggle



Designed for acetylene welders who prefer goggles, yet need the convenient raising and lowering feature of a helmet for inspection of their work. The No. 229 fits close around the eyes to exclude the light. Has an adjustable headband, with padded sweat band for added comfort. Comes with the popular Sellstrom type A lens holder and a choice of lenses in regular acetylene shades.

634-3 N. Aberdeen St. Chicago 22, Illinois

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for better Reroducts

VEARS OF "KNOW HOW" BEHIND IT

IT'S not because they're glamorous but because they're so indispensably useful that we show these nuts, bolts, and screws to illustrate typical products made of steel wire.

Without these simple, taken-for-granted metal fasteners to hold things together, some of our most costly and ingenious devices, our most intricate machinery, our stateliest buildings might never have been built.

Wire for metal fasteners is only one of the many forms in which, for over a century, we have produced wire of superior quality for more than 160,000 different manufacturing uses.

Improved by war service

We've learned a lot about making wire better during these war years. We know how to turn it out faster and in greater quantities, and to meet the most severe specifications. New and better steels have been developed to give wire ever greater versatility.

All this means that as more American Quality Wire is released for civilian manufacturing you'll find it better than ever before—to do a better job for you.

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago, New York
Columbia Steel Company, San Francisco
United States Steel Export Company, New York



UNITED STATES STEEL



Give him New Comfort in eye protection with the NEW AO FUL-VUE ACETATE GOGGLE

> This new acetate goggle—the result of two years' research in AO's Development Department-offers real comfort in eye protection.

> It has a stronger, more massive front than ordinary acetate models. A deep groove in the lens rim forms a lens seat with substantial backing to resist severe impact. And the bridge has a slight amount of face form to give added side protection. Nose pads are also made of heavy stock and have well-rounded edges and an ample flare to withstand extraordinary jolts and

Besides greater strength, this new goggle is designed for all-day comfort, too. The

light-weight acetate rests lightly on the face, while comfort cable temples hold the goggle snugly in position, prevent it from sliding forward on the nose. And the excellent fitting qualities of this goggle make it ideal for workers who need Super Armorplate lenses ground to their own prescriptions.

AO Ful-Vue Acetate Goggle No. F-8247 comes in 47 mm. eyesize in Pink Crystal with either white or Calobar 6-curve Super Armorplate impact-resisting lenses. It is available in three bridge sizes, 22, 24, and 26. Your nearest AO Representative can supply you. Call him today. And if you need acetate goggles for flash welders and those working around welding, ask him about the other new Ful-Vue Acetate Goggle that comes equipped with side shields and Calobar lenses.



SOUTHBRIDGE, MASSACHUSETTS

Manufacturers for more than 111 Years of products to Aid and Protect Vision. Branches in all principal industrial centers

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Profit in Priorities

(Continued from page 316)

records has done a real service for this type of business man. It is to be hoped that the wisdom of adequate records, by this time, has become indoctrinated in a majority of cases in our business system.

The purpose of this article is to bring before business the fact that they must still continue the type of records these government reports require. These records are necessary because the answers to the questions asked by the government are in the same vein as those questions that should be asked by the executive administrative vice president or president of the corporation. Bringing it down to small business, these reports have shown conclusively that regardless of the size of the business involved, these questions must still have answers; whether the business is one man, fifty men, one hundred men, one thousand men, etc. The art of successful business management is a combination of two factors—the art of knowing and the art of doing. Records give you past performance; forecasts give you future production; and production and sales give you present performance.

Can your system answer these questions? If it can, two-thirds of

your job is done.

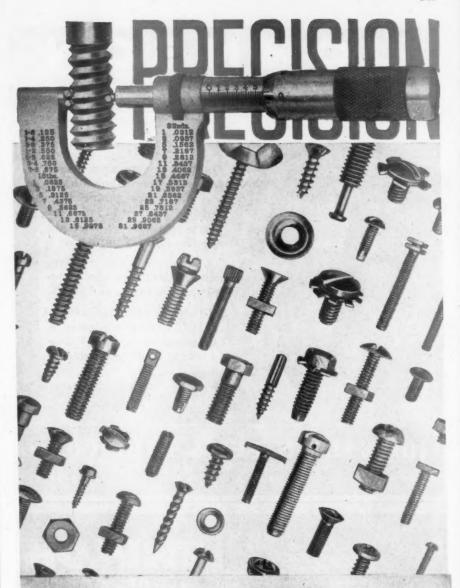
Changes in Navy Procurement

(Continued from page 110)

land Association affairs. Mr. Goubeau was born in New York City and was associated with the United Fruit Company in that city before going to Boston to take over a more responsible position.

Comdr. E. P. McGuire succeeds Mr. Goubeau as Deputy Chief of the Procurement Branch of the Office of Procurement and Material. He joined the Navy early in 1942, coming from an executive position in Montgomery Ward & Company. He had previously been in charge of the Price Revision Division of the Office of Procurement and Material.

In his new capacity Mr. Goubeau will have charge of coordinating the various phases of procurement in the Navy Department as well as establishing procurement policies within the Navy. He also serves as a member of the Procurement Policy Board of the WPB.



The war production requirements for precision in every mass produced unit of assembly are amply met by HOLTITE Screws, Bolts, Nuts and allied fastenings. Produced in great quantity with the uniform precision of small tools, these trouble-free units are gauged and

inspected to strict standards of accuracy throughout every stage of manufacture. From metallurgically tested raw materials, through the wire processing mill (in our own plant), to final inspection, HOLTITE fastenings are fabricated by the most precise equipment in the industry.

Precision parts effect time-saving, reduce spoilage, and assure enduring, faultless service. Specify HOLTITE on your next order.

HOLTITE Recessed Head Screws & Bolts →

Cutting driving time an average of 50%, these production-boosting screws and bolts can be driven safely by spiral, electric and pneumatic drivers without danger of injury to material or worker.





CONTINENTAL
SCREW CO. New Bedford, Mass., U.S.A.
SCREW CO. BUY MORE WAR BONDS

MAR





Quality wire under constant laboratory control all the way from raw material to finished product . . . to meet precisely the most exacting specifications of industry.

XLO Aircraft Cable Wire, extra high fatigue wire, carefully drawn to size and finish.

XLO Music wire (WD-1085-WD-1095) - the wire of a thousand uses. Wire sizes .003" to .200" diameter.

JOHNSON STEEL & WIRE CO., INC. WORCESTER I, MASSACHUSETTS.



For strength and simplicity, only two parts are used — bearing bars which carry the load and have curved slots punched ABOVE THE NEUTRAL AXIS, and cross bars, of the same cross sectional area as the slot itself, pressed into these slots to distribute the load. No rivets,

bolts or welds are required, thus eliminating the possibility of loose joints. Tri-Lok flooring comes in rectangular, diagonal and U shapes with Safety Steps — ask for Bulletin 1140 — Dravo Corporation, National Department, 300 Penn Avenue, Pittsburgh (22), Pa. (Distributor for THE TRI-LOC COMPANY)



Industrial Plywood

(Continued from page 86)

which permit precutting and mass production.

The bulk of all plywood is produced in the Pacific Northwest. The plywood produced in the States of Oregon and Washington is the softwood kind called Douglas Fir Plywood. Throughout the South and in the Northwest other types of plywood are produced from hardwoods. In the past the major portion of furniture veneers came from the hardwood sections of the country.

Elaborate Research Facilities

The plywood industry has set up elaborate research facilities for the study of its products. Many of the developments in the newer plywoods have come from within the industry itself. The research organization of the Douglas Fir Plywood Association, an organization of 31 major manufacturers, has set up standards for the Pacific Northwest product and the information is circulated by the Association.

In the purchase of plywood for any purpose individual buyers may avail themselves of a wealth of information and technical advice which may be had for the asking.

Fluospar — A Vital Material

(Continued from page 114)

normal times, however, foreign mines with lower production costs were able to market fluorspar in this country despite a tariff of \$5 a ton. Besides these lower production costs the foreign mines could obtain unusually low rates on the ocean portion of the transportation to this country due to an inherent "oneway" nature of Atlantic shipping and trade. Ocean traffic was, and will probably continue for some time to be predimonately eastward, carrying American raw materials to Europe. but as few European manufactured products find a market in this country, owners of vessels were faced with the unprofitable prospect of returning in ballast. As any income is better than none, ocean carriers have in the past quoted freight rates from England to Philadelphia that were as low as 38% of the rail rate

(Continued on page 322)

"I TOLD YOU!

—it's a Job for Aeronautical Products, Inc."



 $W_{
m HEN~your~machining~spec}$ specifications say "Tolerance .0005," to us it means five ten-thousandths of an inch, and not a whisper more, or less. Tolerances like these, and much finer, call for experience, skill and machinery of vast proportion. So, if YOUR post-war assemblies require precision machining in volume, right from engineering through to the final inspection, it's a job for Aeronautical Products, Inc.! Here in one complete organization is everything your job needs. Controlled responsibility . . . no buck-passing. You get your answers straight from the shoulder and backed with performance. If our set-up sounds good to YOU, ask your secretary to write our Executive Sales Offices, Detroit, for an impressive list of plant equipment and complete facilities.

MORE BONDS

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• THE SUCCESS of The Aeronautical Products, Inc. Helicopter, designed and built by our own craftsmen, promises new accomplishments in the post-war age of flight!

RODUCTS, Inc.

DETROIT PLANT 18100 Ryan Road, Detroit 12





SIZES:

1/8" 3/16"

1/4" 5/16" 3/8" 7/16"

> 1/2" 5/8" 3/4"

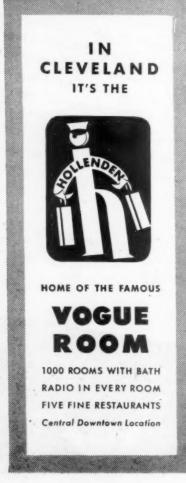
NEED COPPER TUBING?

PUPERIOR Tubing features uniform wall thickness-annealing to specifications -bright finish inside and out-ends sealed and machine wrapping for 50 and 100 ft. coils. Write for data.

PENN BRASS AND COPPER COMPANY . ERIE, PA.

N N BRASS AND COPPER TUBING





Fluospar — A Vital Material

(Continued from page 320)

from Rosiclare in Hardin County. Illinois to Philadelphia. Our tariff policy should be, in the future, of some concern to the industry.

Post-War Outlook

Indications now are that the demands for fluorspar exceed its total production. Stock piles of fluorspar, which steel mills in normal times have on hand for six months ahead. are declining. It has been reported that some mills are using spar far below the former minimum purity of 60% and are experimenting with mixtures of spar and other substitutes. These substitutes to date have given little serious competition to the fluorspar industry. Several possible substitutes such as calcium chloride have been used, but they all combine enough undesirable features to preclude their use in favor of fluorspar.

Several of the mines have found valuable deposits of zinc and lead in connection with fluorspar, while one mine has found some of its ore running as high as 60% sulphides. In these cases, the by-products form an appreciable amount of the total revenue although this is not the usual situation. In mines in which both zinc and lead appear, zinc usually exceeds the amount of lead found in the ratio of about 10 to 1, although it is interesting to note that the first mining in this district was for the lead bearing ores.

Future Supply

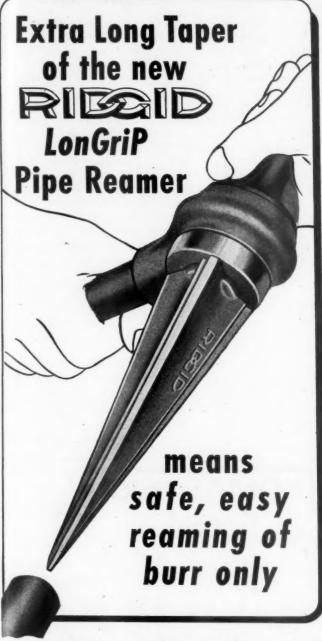
The fluorspar mines are now operating at their fullest capacity and the prediction is that fluorspar production in 1944 will reach an all time high of 500,000 tons. Naturally this output is rapidly depleting the known deposits of fluorspar and the question may arise as to the availability of a future supply. The answer to this question presents several difficulties because prospecting for fluorspar is fraught with uncertainty. The deposits and veins are sporadic and do not occur with any regularity. Where the veins do occur, their narrowness and irregularity make predictions even more a matter of luck. Because of this, no mine has ever had more than a few years supply in view at any one time. Thus it is practically impossible to prophesy as to the future position of this industry. It is believed, however, that, no critical shortage will develop in the relatively near

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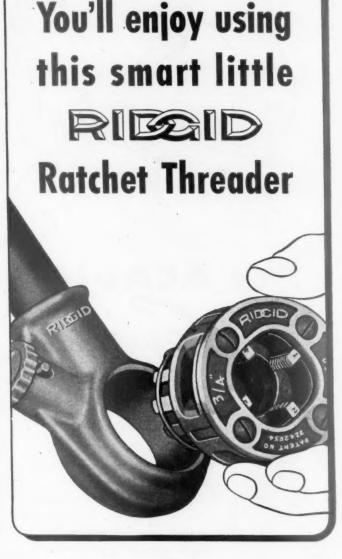
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OOR



o It cuts the burr out clean as a whistle—but it doesn't gouge, thin or split the pipe. Quick easy feather-light strokes, no effort at all. The trick is in the extra long taper—it saves you work and pipe. Complete with ratchet handle—or you may buy reamer unit alone for use in your property No.00R threader handle. War demand exceeds our vastly increased output—we're doing our best to make deliveries to your Supply House. Keep asking.

Reamer unit fits No. 00R ratchet threader bandle.



Die Heads lock in either side

• This 111R threader is a time-saver on pipe from ½" to 1½". Click the size die head you want into the ratchet ring, from either side. No special dies needed for close-to-wall threads, just reverse the alloy steel chasers, easily removed also for regrinding. You'll like this efficient rugged little steel-and-malleable threader—ask your Supply House. We're trying our hardest to meet the big demand for

patience is greatly appreciated.

Handy carrier with any combination of sizes.



Millions of RIBOID
Tools in use

PHENDE TOOLS

The Ridge Tool Company Élyria, Ohio, U. S. A.



combination of characteristics,

Write us today.

ARMY USES HENEQUEN ROPE

THE Army is now buying rope manufactured in the United States from henequen fibre imported from Mexico. During 1944 the Quartermaster Corps bought considerable henequen rope made in Mexico.

Purchases from Mexican manufacturers will continue, and supplementing this supply will be the henequen rope

made in this country.

Following the fall of the Philippines, which deprived the United States of practically all supplies of manila fibre, the most suitable for rope making, the Army turned to African sisal fibre to meet its requirements for hard fibre rope. Use of African sisal has not been abandoned but the supply has been somewhat reduced by demands for the fibre by other Allied nations.

Henequen fibre is obtained from a cactus-like plant grown in Mexico, and rope made from the fibre has

been found satisfactory for Army uses.

FREE SILVER

DISTINCTIONS between the use of Treasury "free" silver and domestic silver have been removed by Direction 3 to Order M-199, the War Production Board announces.

Treasury "free" silver is silver that has been sold by the Treasury Department upon approval of the War Production Board. This Treasury silver can now be used for any purpose for which domestic silver could formerly be used.

(Continued on page 326)



You find accuracy in every important detail of

CLEVELAND Top Quality
FASTENERS

CLEVELAND
Top Quality
FASTENERS

The Cleveland Cap Screw Company
2933 EAST 79TH STREET • CLEVELAND 4, OHIO
Warehouses: Chicago, Philadelphia, New York, Los Angeles

Ask your Jobber for Cleveland Fasteners

MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY

MARCH

Officials of the Precious Metals and Mercury Section of the Miscellaneous Minerals Division emphasized that the change in the restrictions on the use of Treasury "free" silver does not increase the amounts of silver that

may be used under WPB orders.

CHROMIUM PLATING ON ALUMINUMS

CHROMIUM may now be deposited electroplytically onto aluminum or aluminum alloys by means of a simple method, known as the PREPLATING PROCESS; a development of the Technical Processes Division of Colonial Alloys Company, Philadelphia, Pa.

Chromium deposits of considerable thickness can go directly onto the aluminum surfaces, or follow copper, nickel, zinc or cadmium plating. The procedure for hard or decorative chromium finishes is the same as used when plating on other metals with the exception that aluminum requires special surface preparation.

The aluminum is thoroughly cleaned as prescribed, passivated, immersed in PREPLATING SOLUTION for a few seconds, and then electroplated in the usual manner, using the regular equipment found in all plating shops.

Torsion, heat, corrosion resistance and weathering tests have shown up well. Adherence is good.

Hard chromium bearing surfaces present low coefficient of friction, hard adherent coats, high thermal conductivity and oil film retention (close and porous grained). High abrasion and impact resistance are obtained with hard chrome.



THE GUMMED PAPER CO.

THE GUMMED PAPER CO.

THE GUMMED PAPER CO.

THE GUMMED PAPER CO.

CENTRAL PAPER CO.

CO.

THE GUMMED PAPER CO.

AND OTHER TAPE MFG'S.

SOLABOLL

Adopted by the Manufacturers of SOLSEAL Water-resistant Tape

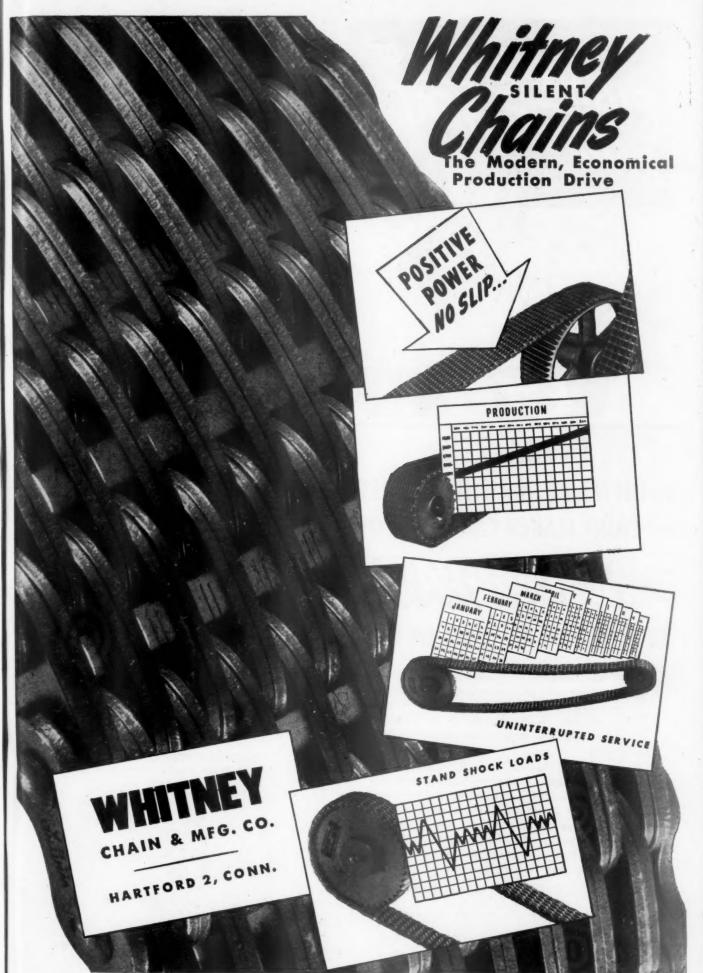
Because of its outstanding superiority as a wetting agent for tapes of the water-resistant type, Tanglefoot "W-51" solvent is now being sold by all of the producers of this tape under the trade name "SOLSEAL SOLVENT W-51". Hence, when you use SOLSEAL tape and SOLSEAL SOLVENT W-51, no matter of whom you buy it, you can be absolutely sure not only of meeting government specification AXS1213, but of quick, trouble-free application. It sets hard and firm quickly. It won't slip or slide. For complete protection use SOLSEAL water-resistant tape with SOLSEAL SOLVENT W-51.

A Product of

The TANGLEFOOT COMPANY

401 STRAIGHT ST.

GRAND RAPIDS 4, MICH.



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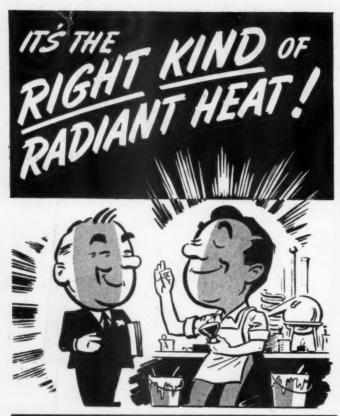
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INFRA-RED **EQUIPMENT MANUFACTURER** and PAINT MAKER CAN AGREE ON



No longer is "passing-the-buck" a game to be played by paint men versus equipment men. No longer is the "buyer" in the middle as to whether

paint or equipment is responsible for unsatisfactory results.

Penetray's exclusive ceramic coating improves wavelength, producing more intensive color, thorough curing and superior polymerization on metals. In addition, insect attraction is minimum because glare is reduced and improved uniformity of energy distribution results. Prove these points. Make your own tests for color and gloss; for corrosion and abrasives.

SALES ENGINEERS WILL CALL OR DETAILS ON REQUEST





MACHINE TOOL ORDERS

MACHINE tool purchase orders of the Army, Navy, Maritime Commission or their prime and subcontractors must be accompanied by photostatic copies of WPB-542 certificates to permit identification with urgent programs, the Tools Division of the War Production Board reports, in amending General Preference Order E-1-b.

INDUCTION HEATING PERFORMS VITAL WAR JOBS

NDUCTION heating, which accelerates production, permits the use of economical metals, offsets material shortages, and increases the working and wearing strength of vital parts by large percentages, was characterized as one of America's most important "secret weapons," by Howard E. Somes, of Budd Induction Heating, Inc., Detroit, at the 45th Annual Meeting of the Society of Automotive Engineers.

He said that induction heating, developed about 10 years ago as one means of increasing the consumption of electrical energy and initially applied to bore-hardening automobile hubs, has performed such vital war jobs as:

Making possible the use of cheap low-alloy steels and cast iron in the production of weapons and ammunition.

Improving the service life of cast iron cylinder sleeves for diesel engines.

High-speed production of automotive bearing races, (Continued on page 330)



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A Race Track Smoother than a Mirror

It's the cup—the outer race or roll track—of a high-precision roller bearing. And it's made from Republic Electric Furnace Steel - because the manufacturer insists upon the finest steel his money can buy.

Top quality is one reason. Anti-friction bearings must be uniformly high in strength to resist tremendous strains -high in hardness to resist wear.

But there's another reason - a very important one. In the manufacture of these cups, more than 20 individual operations are climaxed by honing to a smoothness of approximately 3 micro-inches (3/1,000,000ths of an inch). Hence the steel must be free from minute imperfections to insure against rejection at final inspection -loss of material and labor-excessive manufacturing costs.

Republic Electric Furnace Steels are as CLEAN and SOUND as the most modern furnace practice and longest experience can make them. They're consistently UNIFORM, too-in physical, chemical, hardenability and performance values. And because they are homogeneous and free from practiceupsetting variables, they enable manufacturers to derive the greatest possible benefits from mass production.

By using Republic Electric Furnace Steels, engineers can predetermine product quality-because the close control possible only in electric furnace melting permits accurate "targeting" to narrowest specifications. Today, these fine steels are helping

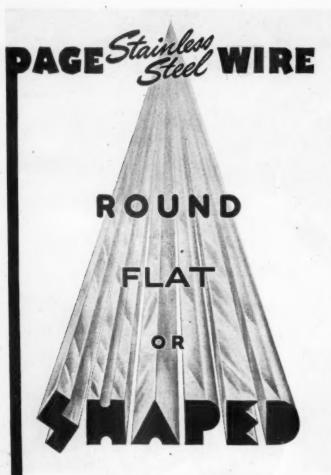
to make possible the world's finest fighting machines-helping to achieve miracles in performance and production. Tomorrow, they will help manufacturers of peacetime goods to offer customers more for their money. Why not prepare for tomorrow NOW by learning just how Republic Electric Furnace Steels can help YOU?

REPUBLIC STEEL CORPORATION

Alloy Steel Division . Massillon, Ohio GENERAL OFFICES • CLEVELAND 1, OHIO Export Department: Chrysler Building, New York 17, N.Y.

REPUBLIC -Leader in the Production of **ELECTRIC FURNACE STEELS** "QUALITY" steels . . . alloy . . . stainless

MARCH



 Every production problem is different. But if there is any way to use stainless steel wire in making your product, PAGE engineers can go into that part of your problem-and come up with the answer.

Wire has always been the business of PAGE. Stainless steel wire has been a PAGE specialty through the years of development of stainless. PAGE has accumulated a wealth of experience in the various analyses of stainless, in the drawing and rolling of stainless wire, and in the application of such wire to manufacture of other products.

The PAGE distributor nearest you offers you the benefit of this experience. If you have any production problem that might be solved by the use of stainless steel wire, it will pay

Get in touch with Page!

Monessen, Pa., Atlanta, Chicago, Denver, Los Angeles, New York, Pittsburgh, Portland, San Francisco, Bridgeport, Con

> PAGE STEEL AND WIRE DIVISION AMERICAN CHAIN & CABLE

(Continued from page 328)

axle ends, internal gears and splines, grease retainers, bearing cages, cylinder liners, and other parts for land vehicles and aircraft.

Increasing by 75 to 85 per cent the collapse strength of oil-well casing joints.

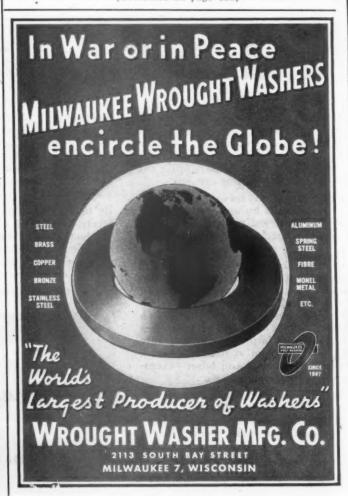
Mr. Somes said that induction heating machines occupy little space, are fully automatic, afford precise control both of heating and quenching, and assure 100 per cent automatic inspection of results. Defects in parts, creating abnormal resistance to the flow of hightension current, produce excessive temperatures and other physical signs of difficulty, he added, making inspection automatic also.

STAYPACK - IMPROVED WOOD WITHOUT RESINS

REMOVAL of military restrictions on certain information has enabled the U.S. Forest Products Laboratory at Madison, Wis., to announce another laboratory improved wood—staypak. Staypak is a heatstabilized high-density product made by compressing either solid wood or many layers of thin veneers. The material contains no resin except, in the case of the laminated product, normal amounts of resin adhesive to bond the veneers during pressing.

Staypak was originally conceived as a stabiliaed wood specialty material that would have the same general characteristics as resin-treated compressed wood (compreg)-another Forest Products Laboratory improved wood—plus the virtue of toughness. Staypak is about twice as good as compreg in both the standard

(Continued on page 332)



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EVER stop to think why fighting equipme. Ideals out greater destruction today—tasts longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American in recent longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American in recent linger—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes more punishment? It's due to a lot of things—American initiative, longer—takes initiative, longer—takes more punishment? It's due to a lot of things—takes initiative, longer—takes initiativ



GIBSON SPRINGS

The WILLIAM D. GIBSON CO

DIVISION OF ASSOCIATED SPRING ORPORAT

1800 CLYBOURN AVENUE, CHICAGO 14, ILLINOIS



Forest Products Laboratory toughness test and the Izod test for notched impact strength.

Staypak is an outgrowth of the metal shortages encountered in early stages of the war production program. Under the stimulus of military demands for modified woods to serve primarily in aircraft production, the Laboratory developed compreg-modified wood without normal wood's tendency to swell and shrink, much harder than normal wood, moistureresistant, and also notably resistant to chemicals, insects, and decay. Compreg, however, because it is a combination of wood and synthetic resin, exhibits some of the characteristics of the contained resin. Although most of its strength properties are high, it is more brittle than the original wood.

Staypak is somewhat darker than ordinary compressed wood. When made between polished platens (pressing surfaces) it has a smooth satiny finish that approaches the gloss of compreg. It machines nicely with metal working tools and takes a good polish on

all cut surfaces. At comparable moisture content and specific gravity values, the compressive strength of staybak, both parallel and perpendicular to the grain, is somewhat lower than that of compreg, but the tensile strength parallel to the grain and bending properties is about 25 percent higher than for compreg; tensile and flexural values of the parallel laminated material range from about 40,000 to 45,000 pounds per square inch, which is approximately double the average values for natural yellow birch and triple the average values for Sitka spruce. Its chief physical advantage over compreg, however, is that it is about twice as tough.

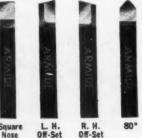
(Continued on page 334)



jobs in tool rooms, shops and maintenance departments. They are standard, multi-purpose tools which offer special advantages on machining operations involving: (1) Long runs, (2) High speed operation, (3) Cast iron, (4) Tough alloy steels, (5) Nonmetallics, (6) Hardened parts (obviate need for annealing and re-hardening).

Each set comprises: 3 ARMSTRONG Carbide TOOL HOLDERS, 8 ARMIDE Carbide-Tipped Cutters - 4 ARMIDE Red, for machining steel and 4 ARMIDE Gray, for machining Cast iron, brass, bronze, aluminum and non-metallics; with service wrench in a fitted steel case. (as illustrated)

Left-Hand Off-Set Right-Hand Off-Set ARMIDE Gray Cutters L. H. Off-Set ARMIDE Red Cutters



ARMSTRONG-ARMIDE Sets are stocked by leading Industrial Distributors in 4 sizes.

Write for Bulletin C844.

ARMSTRONG BROS. TOOL CO.

The Tool Halder People" 303 N. Francisco Ave., Chicago, U.S.A. Eastern Warehouse & Sales: 199 Lafayette St., New York

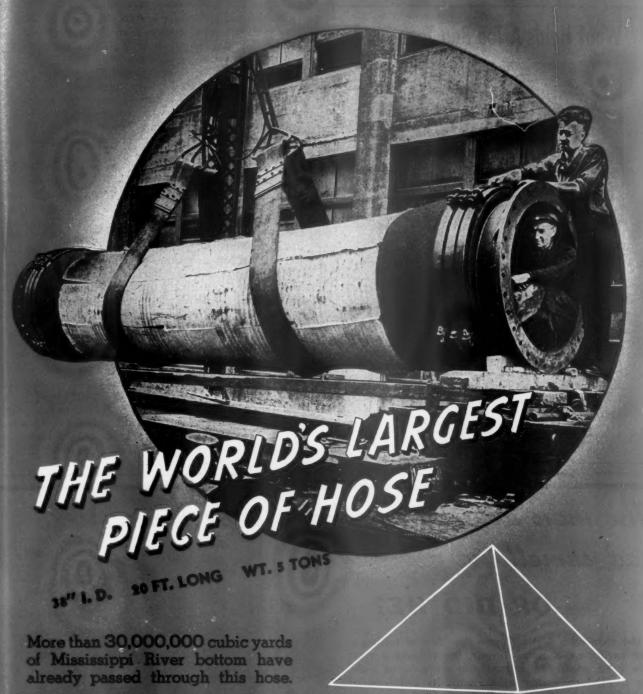


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III.



This amount of material would make 10 pyramids, each as large as the Great Pyramid of Egypt

It would fill a trench two yards wide and two yards deep that would reach from Boston to Los Angeles.

This piece of hose was installed in 1940 as a flexible joint on the suction end of a hydraulic dredge. It is still in use and GOING STRONG!

DIMENSIONS OF GREAT PYRAMID

Base: 750 ft. x 750 ft. Height: 482 ft. Contents: 3,041,148 Cu. Yds.

BOSTON WOVEN HOSE & RUBBER COMPANY

WORKS: CAMBRIDGE, MASS., U.S.A. P.O. BOX 1071, BOSTON 3, MASS., U.S.A.



MARCE

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CENTRAL PAPER COMPANY INC.
2446 Lakeshore Drive • Muskegon, Michigan

(Continued from page 332)

Although the heating of staypak material to proper temperature at the center during pressing imposes a practical limitation, panels up to 1½ inches in thickness have been processed successfully.

Staypak will swell, but swelling is so slow that for many purposes it need not be considered. The surface, however, weathers like normal wood and unlike compreg should be painted for out-of-door use.

preg should be painted for out-of-door use.

Staypak can be glued satisfactorily to itself or to normal wood; it glues more readily than compreg because of the absence of resin.

As staypak is not in commercial production, its postwar uses can only be predicted on the basis of its known properties and on the fact that it is cheaper to manufascture than improved woods that contain considerable synthetic resin. Its high impact strength suggests its use in spar plates for strengthening the joints between fuselages and wings in the improved post-war small airplane and in propellers for aircraft.

Other articles which staypak's unique properties bring to mind are tool handles, tooling jigs, forming dies, mallet heads, pulleys, silent gears, or any other use of a similar nature requiring toughness, hardness, and other high strength properties together with good stability.

The cost of staypak is roughly proportional to the increase in specific gravity as compared with uncompressed wood. The present ceiling price for 1-inchthick Douglas fir plywood of the best grade is just under 19 cents per square foot at the mill. Douglas fir laminated staypak made from select veneer should cost in the neighborhood of 65 cents per board foot to manufacture, in thickness not exceeding 1 inch.

(Continued on page 336)

The man who first rolled a wire spring

had something

--OR DID HE?

To the man who first hit upon the idea of rolling a wire spring on a simple arbor, the discovery must have been mighty important! But were he to walk into a modern spring plant, with its batteries of rapid-fire automatics delivering springs of thousands of designs formed to extreme precision, he would hardly recognize his brain child.

Today, springs are made in the Peck plant to dimensions that even a few years back would not have been thought possible. Production has been stepped up unbelievably. New and better alloys have become common. And inspection is now almost an exact science! Fortunately, we are able to devote this advanced technique to Victory. Afterwards it will be made enthusiastically available to all who take pride in a well-made product.



Peck SPRINGS & SCREW MACHINE PRODUCTS

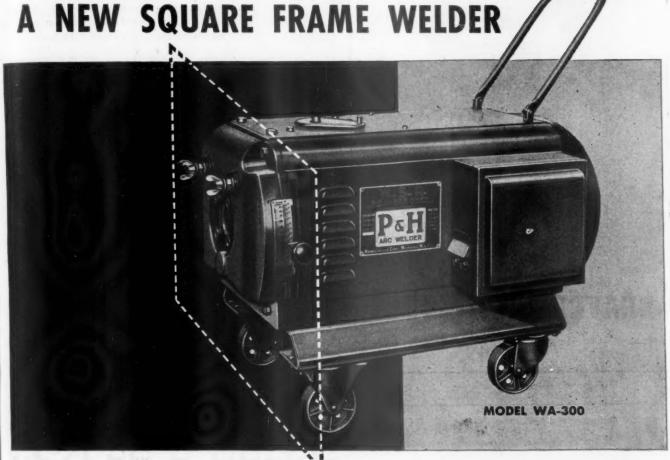
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with WSR (WELDING SERVICE RANGE) from 60 to 375 amperes

NOW—all the unique advantages of P&H's Square Frame design (and some new ones, too!) are brought to you in a welder of larger capacity.

Here are a few important operating advantages:

- SIMPLE SQUARE FRAME DESIGN with but two major parts.
- PARALLEL OPERATION dual mounting of machines enables you to handle higher amperage needs.
- POLARITY REVERSING SWITCH
- REMOVABLE STATOR for easier inspection and servicing.

- CONTACT OVERLOAD PROTECTION
- MAGNETIC STARTER with low voltage and overload protection.
- WEATHER-PROOF CONSTRUCTION

A single control provides any desired welding heat within the machine's capacity. WSR (Welding Service Range) ratings give you the actual usable welding current the machine will deliver from minimum to maximum. "Visi-matic" calibration enables you to select, instantly, the right current for each of the three classes of electrodes—high, medium, or low voltage.

If your work falls within a range of 60 to 375 amperes, it will pay you to get all the facts about this new P&H Model WA-300. Write for Bulletin No. W-59.

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THREAD BOLTS?



This patented dieholder — with large opening below die for instant clearance of turnings - is available for either the Nos. 2 or 3 BEAVER Drophead Ratchet Pipe Threaders. torn threads due to chips packing in the die.

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BEAVER PIPE TOOLS

345 GROW AVENUE WARREN, OHIO

laminated birch staypak would run about 90 cents per board foot on the same basis as against 40 cents per square foot for birch plywood 1 inch thick. Staypak made from solid wood would, of course, be less ex-

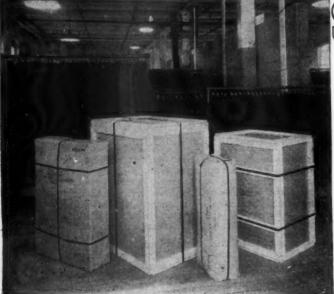
Details of manufacturing conditions of staypak are contained in a report (No. 1580) available on request at the U.S. Forest Products Laboratory, Madison, Wis.

PAINT BRUSH BRISTLE SUPPLY IS DECLINING

INDUSTRIALIZATION of China after the war will dry up the source of long bristles for paint brushes, according to I. A. Rubin, president of the Rubico Brush Manufacturers, Inc., New York, a subsidiary of Osborn Manufacturing Co., Cleveland. He explained that long bristles come from old pigs, that China is the only large country whose standard of living is such that it pays farmers to delay butchering for the few ounces of bristle one pig yields, and the coming industrialization of China will raise living standards to the point that the last remaining source of long bristles will disappear.

The limited supply of Chinese bristles now coming to this country is from Chungking, from where the bristles are flown by plane to India and shipped by boat to the United States, Mr. Rubin said. The war shortage, he said, has resulted in development of a domestic bristle supply of excellent quality when properly treated, but an inch or more shorter than the 41/2inch bristle which makes up a third of the Chinese exports. Also synthetic bristles have been developed

into a satisfactory substitute.



There is a strap size for every type of container.

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It is good business to select a container ... carton-crate-package ... that meets each particular shipping requirement. This clothing firm employs all three at a savings. Note that each has Signode Strapping PROTECTION.

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is at your command. A fully qualified Representative will gladly consult on any shipping problem-his experience may mean savings in materials and time. Why not call for his service?

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Alone in a sea of waving wheat . . . a lighthouse on land, guiding vital cargoes along ribbons of steel. Dependability is paramount . . . and the railroads know that Exide Batteries, developed especially for signal service, can be trusted to do the job.

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truck. They provide light and air-conditioning for railway cars. They serve on ships and airplanes. They help speed your voice along the telephone wires. And in millions of cars, trucks and buses they have proved the truth of the slogan ... "When it's an Exide you start!"



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THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 Exide Batteries of Canada, Limited, Toronto



* If reconversion in your plant calls for wire shapes or forms or light metal stampings you can forget that worry. Let Jeschke's engineering staff help you with the designing and engineering and let Jeschke's production experts meet your requirements,

when you need them.

eled finishes that meet Army and Navy speci-

ALL STANDARD

FINISHES AVAILABLE

Our plant is equipped to give you Bonderized,

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As the result of years of experience in making all kinds of wire shapes and forms by the millions, you'll find the Jeschke organization helpful in many ways. We're ready to help with your reconversion. Just send a sample, blueprint or drawing or tell us your problem. No obligation, of course.

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IF IT'S MADE OF WIRE WE CAN MAKE IT

POSTWAR PAINTS

THE vast research and test programs carried on for the Army and Navy have resulted in greatly improved protective qualities of metal paints, according to Austin O. Allen, vice president in charge of Manufacturing and Research, Vita-Var Corp., Newark, N. J.

"Synthetic resin developments and improved methods of treating oils have made it possible to produce spar varnishes of improved durability and faster drying

time," he said.

"During the war period a great deal of progress has been made in improving exterior emulsion paints. We feel that for use on concrete, stucco and brick surfaces, exterior emulsion paints will be produced which will have good durability and surface characteristics. There is some question as to the advisability of using emulsion paints as the prime coat on wood or ferrous metals.

Complete Hiding in One Coat

"The new synthetic vehicle developments will give interior finishes with superior surface properties. can expect interior flat finishes that can be applied in one coat over any surface and give complete hiding and perfect uniformity of appearance.

"Much faster drying properties can be expected. We will have real four-hour enamels, enamels that you can walk on or sit on in four hours or less. These finishes will have greater resistance to wear, washing and other

service conditions.

"Fire retarding paints have been developed to a very high degree to meet the requirements of the Army and Navy. They will be available for general use on wood, textile and composition surfaces. These coatings have good durability as well as fire retarding properties, and

(Continued on page 340)



Welded construction to insure long life and dependable, leakfree service is nothing new to Eagle. When you use Eagle oilers, you get the advantage of forty years' welding experience along with practical, modern design. You can always rely on an Eagle Oiler for high quality materials, finest workmanship and full performance satisfaction.

Welded Steel Bench Oilers are available in sizes 1/3 to 1 pint with 4, 6, 9 or 12 inch rigid welded steel spouts; also 7 inch flexible spouts.

Order from your Distributor

EAGLE MANUFACTURING COMPANY Wellsburg, West Virginia

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SYLVANIA NEWS

INDUSTRIAL EDITION

MARCH

Published in the Interests of Better Sight and Sound

1945

Long-Slim Fluorescent Lamps Will Simplify Wiring and Maintenance

Sylvania Rounds Out Line to Provide Lamp Types for All Industrial Needs

Four new fluorescent lamps, rounding out Sylvania Electric's extensive fluorescent line—will offer distinct economy advantages in both installation and maintenance.

"Long-slim" sums up the physical appearance of these new lamps. 42" and 64" lengths will be produced in a 34" diameter; 72" and 96" in a 1" diameter. All will use a single-pin base.

The new lamps are of the instant-starting type, requiring no starter. Elimination of this accessory will reduce the maintenance attention needed. The fact that these lamps have a higher lumen per watt output than any previous type offers a further advantage.

Still another novel feature of these

lamps is that, by proper selection of ballasts, two levels of light output may be

At present, these lamps are being produced in sample quantities only. The sockets and ballasts will not be available for several months. However, publication of data on the "long-slim" lamps will be of value to factory executives when selecting from Sylvania's complete line the types of fluorescent best suited to their post-war modernization needs.

Another addition is a 13-watt miniature lamp, 21" long and 5%" in diameter. This lamp is of the conventional starting type, but will require a new ballast for its operation.

Other Lamps In Sylvania's Complete Fluorescent Line

In addition to the new lamps described in the adjoining columns, the complete Sylvania fluorescent line includes these types:

STANDARD FLUORESCENT

In 14, 15, 20, 30, 40, and 100 watt ratings.

MINIATURE FLUORESCENT In 4, 6, 8, and 13 watt ratings.

BLACKLIGHT LAMPS

In 4, 6, 8, 15, and 30 watt ratings. Convenient linear sources of Near Ultra-Violet radiation.

TYPE RP-12

A compact source of Near Ultra-Violet, designed to operate on 24-28 volts DC.

THE NEW ADDITIONS TO SYLVANIA'S FLUORESCENT LINE

LONG-SLIM LAMPS	CURRENT MILLIAMPERES	APPROX. INITIAL LUMENS	LAMP LIFE HRS.		
42" T6 42" 3/4"	100 200	900 1400	Life of Long-Slim fluor- escent lamps at 200-mil- liampere operation is ex- pected to be comparable to that of 40-watt stan- dard fluorescent lamps. Definite ratings will be published as soon as life testing is conclusive.		
64" T6 64" 3/4"	100 200	1400 2150			
72" T8 72" 72"	100 200	1400 2350			
96" T8 96" 1"	100 200	1950 3300			
MINIATURE LAMP	CURRENT MILLIAMPERES	APPROXIMATE INITIAL LUMENS		LAMP LIFE, HRS	
21" T5 21" 5%"	160	Daylight 490 1500 on a White 580 3-hr. Cycle			

*Under specified test conditions

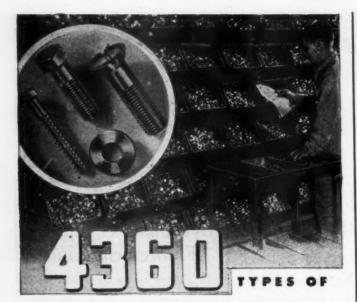
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SYLVANIA ELECTRIC PRODUCTS INC., Salem, Massachusetts

MAKERS OF FLUORESCENT LAMPS, FIXTURES, ACCESSORIES; INCANDESCENT LAMPS; RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES

MARCI

(Continued from page 338)



EVERLASTING FASTENINGS

BECAUSE of these large and varied stocks, Harper is known as "Headquarters for Everlasting Fastenings"...
"Your Logical Source" of non-ferrous and stainless bolt and nut products.

At Harpers the buyer finds three unique and distinct advantages. First, large stocks of all types of fastenings such as bolts, nuts, screws, washers, rivets and specials; second, fastenings in all the commercial non-ferrous and stainless alloys except aluminum, e.g. brass, copper, naval bronze, silicon bronze, Monel and stainless steel; third, large stocks of metals in bars, rods, wire, strip and other basic forms from which special fastenings can be quickly made according to specifications.

1945 CATALOG AVAILABLE. New in usefulness to the metal industries. 104 pages, $8^{1}/_{2}$ " x 11", 4 colors.

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BRASS · BRONZES · COPPER MONEL · STAINLESS can be used for interior and exterior use. We feel that with the many municipal ordinances for public buildings, theatres, hotels, restaurants, night clubs, schools, etc. there will be a wide use for these materials.

"The developments which have been made in synthetic elastomers now being used for various Army and Navy requirements, will make it possible to produce acid, alkali and chemical resisting coatings for industrial and chemical plants where these properties are essential. Good durability will be combined with chemical resistance. You will undoubtedly find a wide use for this type of coating in the industrial areas.

"Fume-proof enamels will be available which will be

far superior to those of the past.

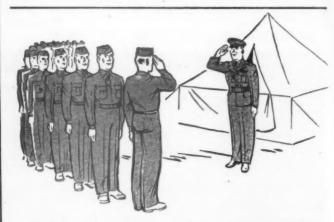
"Insecticidal paints will be available, which will keep the home free from flies, mosquitoes and other insects for probably a year or more. Prolonged tests are now underway. These paints can be made in flat, semi-gloss or gloss and will have all the service qualities of other paints. These paints are not toxic to human beings.

"Improved galvanized metal paints will be available which can be used either as one coat or two coat jobs. These paints will have excellent adhesion to new galvanized metal. The durability of one coat of this paint will be superior to the two-coat job of the past.

"Recent developments indicate that heat resisting paints of superior quality will be available which will withstand very high temperatures without discoloring,

blistering, peeling, etc.

"Non-slip paints have been developed for the Navy which should be popular as finishes for floors in industrial plants, public buildings, banks, etc. and may find use as porch and step paints for the home.



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Although we are concentrating on tents and other canvas requirements for Uncle Sam we are expecting a limited allotment of canvas approved for sorely needed civilian products. Naturally, we won't be furnished enough material to make up everything in canvas that we can produce, so we'll have to make up only what you tell us you need most. Write us so we can plan to supply your urgent wants.



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Plymouth-lubricated fiber being blended and prepared for ropemaking.

FORMULA FOR SHIPS THAT PLAY SNAP-THE-WHIP

David Dietz, Science Editor of Scripps-Howard, explains how engineers blend strength and safety into modern-day rope.



Far out on the heaving Atlantic a disabled merchantman surges at the end of a vibrating towrope. Five million dollars' worth of ship and cargo, and the lives

of her crew, hang in the balance.

Day after day—on the sea, on farms, in industry—Plymouth Rope safeguards life and property—thanks to the skill of engineers who blend tiny fibers into rope of amazing strength.

From Plymouth's vast warehouse of carefully graded fiber, experts select bales with the proper characteristics and determine the proportions in which they're to be blended. This is the first step taken at Plymouth — world's largest ropemaker—to make strong, durable

rope. Then, on a series of machines, these various fibers are combed and re-combed, until they are thoroughly mixed.

Plymouth Rope, from pot warps to hawsers, from transmission lines to lariats, is all blended with this same skill and care, for the specific job it is going to do. Thus, Plymouth engineers use their knowledge of rope construction, plus research, to improve on the ancient art of ropemaking.

Plymouth Cordage Company, Plymouth, Massachusetts, District Offices: New York, Chicago, Houston, San Francisco. Warehouse Stocks: New York, Boston, Philadelphia, Baltimore, Houston, Chicago, San Francisco.





HARSHAW FLUORIDE PRODUCTS are Working Day and Night

The tremendous quantity of supplies needed to win the war is a continuous challenge to the ingenuity of America's production men. Many of them are finding the answer in Harshaw Fluorides.

In the years prior to the war, Harshaw accumulated a wide knowledge of Fluorides through research and practical experience. When the war started this information proved a great help to us in the production of tremendous quantities of Fluorides in the wide variety needed by industry. Fluorides are changing some production methods overnight. New uses are being discovered in un-

Check with Harshaw on your Fluoride requirements or for information which may be of help to you in solving a new production problem.

usual and unexpected manufacturing applications.

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PALLETIZED SLEDS AIDED INVASION OPERATIONS

THE Japs were not the only things that were put on the skids during the successful assault on the islands of the Kwajalein Atoll, according to reports to



Tractors Skid Palletized Sleds

the Office of The Quartermaster General. One factor helping to speed up the operation was the putting of supplies "on the skids" by the Quartermaster Corps.

Hand carrying, which is necessary in so many amphibious invasions, and which ties up so much time and manpower, was reduced to the minimum. Supplies were dragged ashore on palletized sleds, by tractor power, and hauled directly to supply dumps.

Palletized sleds resemble the stone boats used in rural districts to remove heavy boulders from fields, except that they have two wooden runners that raise

(Continued on page 344)



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(Continued from page 342)

the sled 8 or 9 inches from the ground. This construction permits a fork lift truck to shove its fork beneath the sled and raise it from the ground to be transported to another spot where it is deposited either on the ground or on top of another loaded sled.

In the Kwajalein invasion, tractors went right out into the water to the grounded landing boats and pulled as many as three sleds ashore at one time. To carry ashore one sledload of "K" rations alone would have required 36 men, each making one round trip. Rations for six days were handled on 367 sledloads, and 3,800 additional sledloads carried ashore medical supplies, ammunition, fuel and accessories.

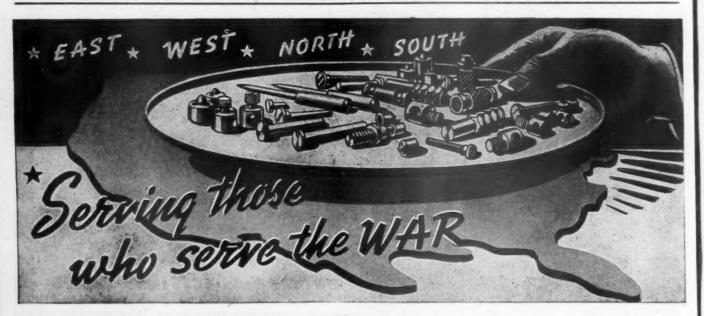
Although the invasion of Kwajalein began on January 31, 1944, the building of the sleds and their loading began as early as the previous November. As soon as the sleds were built they were laid in long rows, spaced so that trucks could run between. Supplies were then loaded from the trucks directly onto the sleds and required no further handling except strapping and pulling to a storage area.

When D-Day arrived it was necessary only to hitch the sleds to a tractor and skid them to the landing craft from which they were loaded in the same manner on the beach at Kwajalein.

PAPER & BURLAP TARPAULIN

SUBSTANTIAL quantities of cotton duck will be saved by the Army through the adoption of a paper and burlap lamination tarpaulin. Immediate procure-

(Continued on page 346)



MAKING a part for another man's product is a challenge! The quality of the two products must match. Meeting this challenge in peace time with continuous success placed "Newton" on the screw machine product "map." Later, when it came time to serve those who served the war, the rigid quality standard which had extended "Newton" peace-time business the length and breadth of the land was just made to order!

Schedules are now full for several months ahead; but, if you need products up to 34", contact us—just in case there might be an open spot.

NEWTON SCREW MACHINE PRODUCTS
THE NEWTON MANUFACTURING CO., PLAINVILLE, CONN.

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per reEver see a Mold with Invisible

WE USED TO MOLD 96 switch housings in an 8 hour shift with this mold. Now we turn out 200-all with the same 14 inserts. The plastic material is cured better than before. We use the same press. It's like having a couple of extra cavities you can't see.

That's what Heatronics (radio-frequency preheating) has done for one of our jobs. For others, it has allowed thicker wall sections—lower molding pressures (sometimes on lighter presses) - more simplified processes. It has even made feasible new applications that we used to shy away from before.

So this is a good time to re-assess your molding program in the light of what Heatronics can do for you. We can help with this at Kurz-Kasch because we've gone into Heatronics more thoroughly than most. In fact, we began with the first RCA unit, and now have one of the largest, fastest-growing installations in the industry.

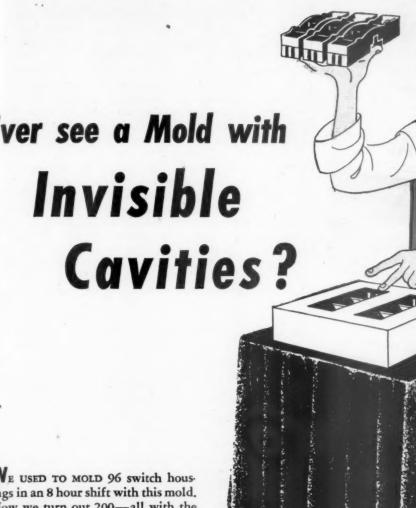
More important, we've had the type of experience that comes from sharing in Heatronics development. We can apply to your problem every advantage that it offers today. With our 28-year-old name for leadership in the plastics industry-plus one of the largest, best-equipped custom plants in the country — that is just one more reason to see Kurz-Kasch first for plastics. Ask for an engineer.

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(Continued from page 344)

VASCOLOY-RAMET Tantalum-Tungsten TOOLS · BLANKS · DIES World's Finest Carbide. Vasceloy-Ramel vioria's rinesi Carpiae. vasculoy Kamel Standard Carbide Tools perform 90% of all Carbide tool operations. Write for Carbide Tool and Blank Price List showing additional Standards. VASCOLOY-RAMET, ANTUNG CAST ALLOY TOOLS "Fill the Gap" between High-Speed Steel and Carbides. Cut any material that can be machined. Greater speeds, more pieces per grind, better finish than with highper gring, pener rinan man with myre speed steel. Write for Tantung Catalog. COLOY-RAMET CORPORATION NORTH CHICAGO . ILLINOIS Sales and Service in Principal Cities

ments of large amounts of new material are being made so as to provide waterproof coverings for front line supplies. It is anticipated that the savings of cotton duck will amount to millions of yards during 1945 and, at the same time, it will be possible to increase the supply of waterproof coverings available for front line use.

The cost of the new tarpaulin will be much less than for cotton duck, and the reduction in both weight and bulk combine to conserve shipping space and pro-

vide a unit which can be handled by two men with ease.

The current specifications for the new tarpaulins, which are known officially as Paulins, Burlap, Large, OQMG No. 192, provide for two combinations of materials, one having two layers or plies of paper, the other but a single sheet. The paper is an olive drab high wetstrength kraft weighing 40 pounds per ream (24x36-500) and is creped so that the final weight is 48 pounds per ream. The paper is sized so that it retains a high percentage of its strength when wet and the creping makes it fairly flexible. Asphalt is used as an adhesive and an additional waterproofing agent, and is applied at a rate of more than 100 pounds per ream. The asphalt employed does not crack at low temperatures nor bleed at high temperatures. The burlap fabric is a standard product 40 inches in width and having a minimum weight of 10 ounces.

The finished tarpaulin is manufactured almost exactly as the one produced with cotton duck and conforms to standard Quartermaster design. Five widths of the laminated material are sewn together and the turned edges equipped with grommets. Each tarpaulin requires

72. yards of material.



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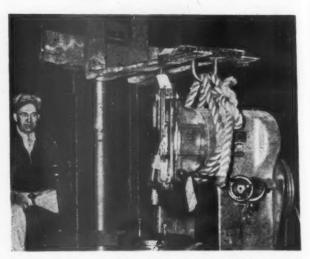
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Seventy-Nine free bulletins and catalogs describing latest developments in equipment, materials and products are listed in the "Know How" Pages, 10, 12, 14 and 16 of this issue.

It's yours for the asking. Just check the coupons and send them to PURCHASING Magazine.

IMPROVISED "YOKE" INCREASES UTILITY OF FORK-LIFT TRUCK

A METAL "Yoke" has been improvised by a civilian employee at the Jeffersonville Quartermaster Depot, Jeffersonville Indiana. It enables fork-lift equipment to raise heavy or cumbersome machinery under which it is impossible to slide the prongs of a machine.



Yoke makes it possible to raise heavy machinery with fork-lift

To lift machinery whose base was flat on the floor, it was necessary under the usual procedure to use a jack or crowbars. This lost time and was dangerous to the men. Tying a rope around the prongs themselves rubbed the rope and tended to twist the prongs.

The yoke fits across the prongs and has welded into it a U-shaped ring. The fork-lift machine is run to the job, and the forks are raised to the desired height above it. The rope is fastened around the object to be moved and is run through the ring and tied. The prongs are then raised in the normal manner. This makes a sling or crane out of the machine; the object can be moved with ease or, if desired, a pallet can be slipped underneath. To prevent the slipping of the metal yoke on the metal prongs, a leather strip is fastened to the yoke by means of wire.

The yokes are made in the millwright shop at the Depot. Separate ones were designed for use on the 2,000 and on the 3,000 and 5,000-pound fork-lifts.





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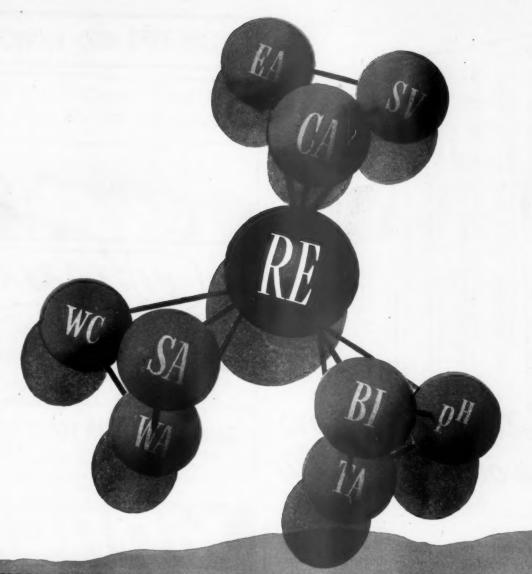
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Correctly cleaning a floor is no simple operation... these elements must go into action...

Wetting Action (WA) must lower surface and interfacial tensions and allow the cleaning solution to penetrate to surface of the base. Emulsifying Action (EA) must disperse grease and oil as tiny globules, and by suspension prevent redeposition. Saponifying Value (SV) must convert organic fats and oils into soluble soaps, and Solvent Action (SA) put soils into solution. Colloidal Activity (CA) must disperse solid soils into minute particles which may then be easily removed. Water Conditioning (WC) removes or controls the elements which cause water hardness.

removes or controls the elements which cause water hardness.

Correct Buffer Index (BI) assures ability to absorb either alkaline or acid soil, thus prolonging efficiency of the solution. Proper pH assures the correct measure of energy of alkalinity and Total Alkalinity (TA) must supply maximum active cleaning energy.

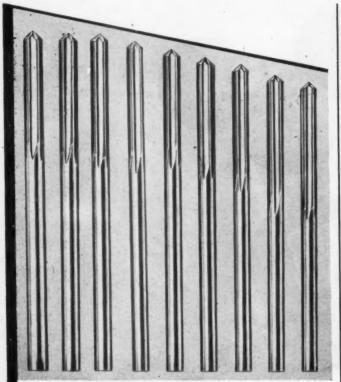
In formulating a cleaning compound, therefore, it is obvious that no one factor is a magic key to all problems. The answer is in determining the relative value of all these factors as they apply to your problem.

Putting these factors into correct balance is a responsibility you can entrust to Turco chemists—a responsibility for which their two decades of Research and Experience (RE) have well qualified them. Take your problem to Turco.

For a fuller explanation of these vital factors, write for Turco's Booklet on your firm letterhead, please.



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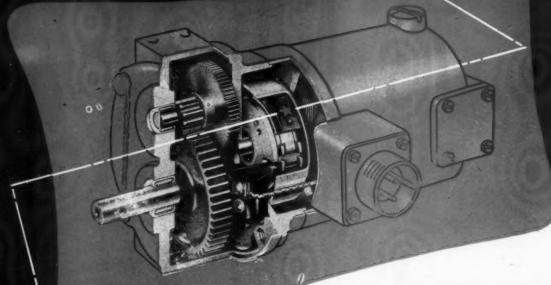
which contains it should be custom-built to fit your product. Our engineering department can design your box or crate for greater utility, greater security, greater economy.

What's more, it will be a SUPERSTRONG- "Bound with Steel"-and there just isn't any better!



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Developed specifically to actuate the inter-cooler door of a high altitude fighter plane, this Dumore motor can be brought to a full stop in 1/2 second by its built-in magnetic brake. Near-perfect control of motor operation protects parts of the driven device against overrunning and jamming, thereby slashing maintenance costs and maintaining an uninterrupted operating efficiency. Successful brake design gave the motor a good start in life. But it really proved its mettle in punishing months of war duty which revealed the motor's absolute operating dependability thru endless hours of unfaltering performance. Compact and accurate controls ... space and weight economy ... steadfast service... these characteristics of Dumore Motors may be the very answer to your product design problems. Motor-plan your product with The Dumore Company, Motor Division, Racine, Wisconsin.

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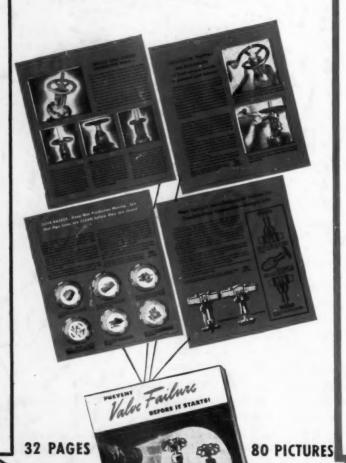
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